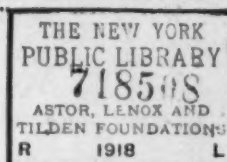




Transporting chasers to "somewhere in the Atlantic"

July, 1917



Motor Boats That Fight Under Water.....	7-9	Prize Contest in Questions and Answers:	
Keeping Up With the Reserve.....	10-11	Don't Give Up the Ship.....	25-26
Answering the S. O. S.....	12	The Dynamo Cut-Out	27-28
Air Fleets to Protect Commerce.....	13-14	Fitting a Gun Mount.....	28-29
Naval Rank and Corps Devices, Part II.....	15-16	American Aids to Air Fighting.....	30
An Important Naval Auxiliary.....	17	Four Motors for Marine Service.....	31
The Speedway Scout Cruiser.....	18	The Art of Semaphore Signaling.....	32
My Ideal Cruiser—No. 6, Dawn.....	19-21	New Things for the Motor Boatman.....	33
Building a Flying Boat, Part II.....	22-24	Changes in Aids to Navigation.....	34
		Yard and Shop.....	35-37
		Among the Clubs.....	50
		All Motor Boats to Be Licensed.....	82

July, 1917

MOTOR BOATING

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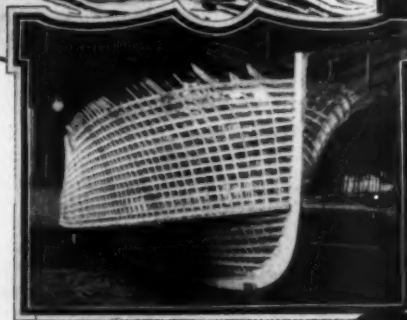
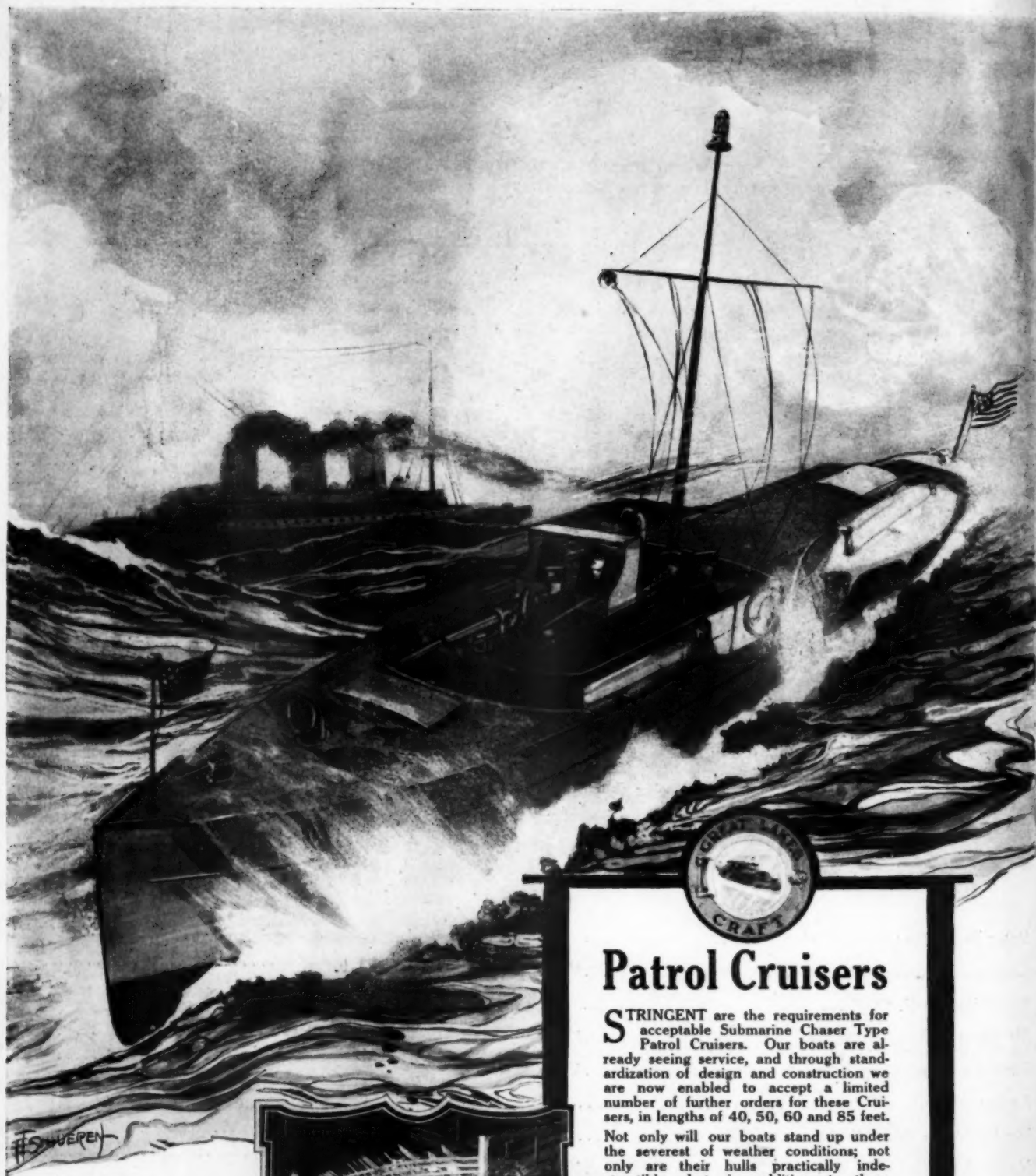
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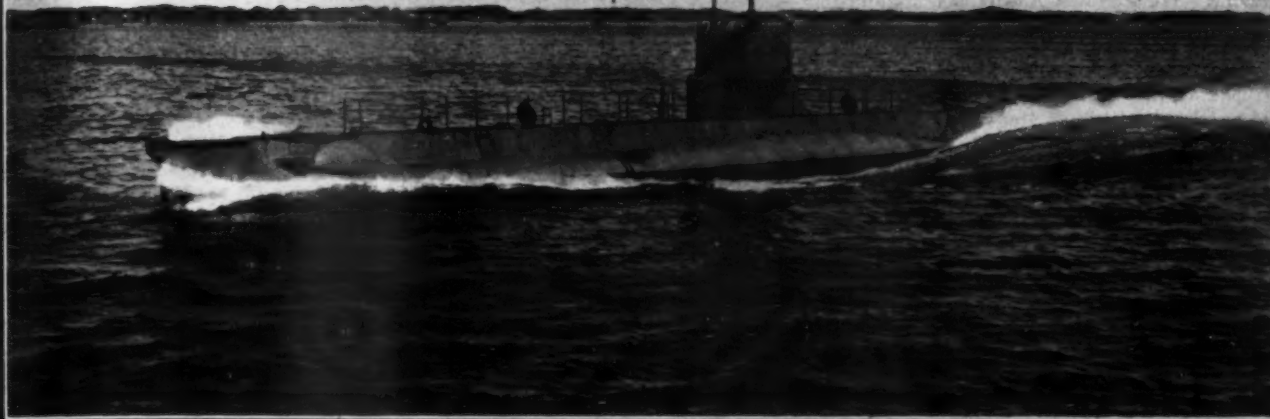
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MOTOR BOATING

THE NATIONAL MAGAZINE OF MOTOR BOATING



A United States submarine of the "L" class running at 14 knots

Motor Boats That Fight Under Water

The Submarine, Distinctly a Motor Boat, is the Result of American Brains—Many Boats Built by American Manufacturers for Foreign Governments

By L. B. Chapman

(Photographs, by courtesy of Electric Boat Company, show interiors of submarines built for foreign countries)

THE activities of the submarine in the present war have created a wide popular interest in this type of boat, yet very few people seem to have a comprehensive idea of it except for outward appearance. It is my intention in this short article to give the reader a more intimate knowledge of the submarine boat and its power plant, letting him gather the story of its exploits from other sources.

Submarines in general can be divided into two classes, coast defense and fleet, or offensive, submarines. The former are purely defensive boats to operate in harbors and bays and short distances off the coast; the latter are of a larger and generally faster type to accompany the battle fleet and to operate at a considerable distance at sea, and if necessary to attack the enemy's lines of communication. There is no strongly marked distinguishing point between these two classes; thus some submarines while built primarily for coast defense are capable of duty at sea for a considerable time. The latest type of German U-boats while not as large and fast as some of the fleet submarines of other navies are purely offensive boats, and as the reader knows capable of long duty at sea.

Submarines are still further divided into two distinct types known as single and double hull boats. The single hull boats are circular in section and of the so-called spindle shape. On top of the circular hull is built a small superstructure to serve as a walking platform for the crew when on the surface and also to house mufflers, anchors, etc. The craft shown at the top of the page is of this type and represents one of the latest United States submarines. Nearly all the submarines in our Navy at present are of this type.

The double hull type is composed of an inner circular hull surrounded by a light ship-shaped hull, the space between the two being used either for water ballast when submerging or for fuel oil. This type also has a superstructure built on top of the hull as in the single hull type. Deutschland was of this type, part of the space between the hulls being used for cargo, and water ballast being admitted to it when submerging.

The single hull type has been developed on account of its great strength, the circular shape lending itself to the pressure of submergence. Nearly all submarines are capable of submerging to a depth of 200 feet and as the pressure at this depth is nearly 100 pounds per square inch, it can be readily seen that great care must be given to the design of submarines to give them the requisite strength. The double hull type has its strength hull within and a comparatively light one outside, as pointed out above.

The German submersibles as built before the war were practically double hull boats although not having the ship-shaped lines generally characteristic of double hull boats. From the photographs available it appears that they are adhering to the same type at present. The double hull boats while of the same strength as the single hull ones have more reserve buoyancy in the surface condition, give a better form for high surface speed and in general are more habitable when on the surface. Further, the double hull construction gives greater safety in case of collision.

The modern submarine is usually divided into a number of compartments, separated by water-tight bulkheads, so that generally in case of accident only one compartment would be flooded and the crew could close up the water-tight doors into the other compartments and stand a chance of saving the ship, unless in water of too great a depth. First comes the torpedo compartment in which the spare torpedoes are carried. The bottom illustration on page 9 gives a view of this compartment with the spare torpedoes in the racks and one of the torpedo tubes open to receive its projectile. The tubes are practically always located in the bow and are generally four in number. Next to the torpedo compartment is located the battery compartment. The storage batteries for submerged propulsion are secured in the lower part of this compartment and are covered by water-tight hatches. Over the battery are located the accommodations for the crew. Here the crew eat and sleep and here also are the galley, pantry, etc. Sometimes the battery is divided into two parts

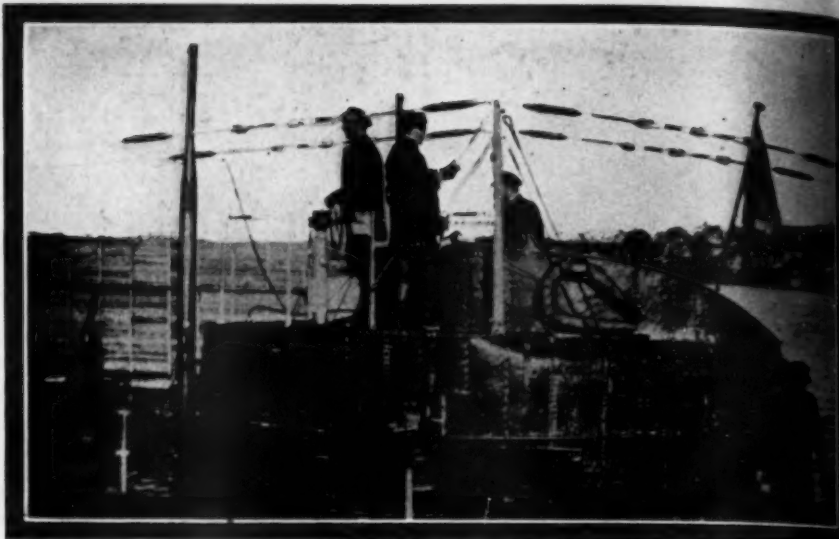
and when this is the case there are two battery compartments, one forward and one aft of the central section.

Amidships just aft of the battery compartment is the central compartment from which the boat is controlled. Here are located the periscopes, steering and diving controls, depth gauges, switchboards, etc. In this compartment also are the levers for admitting the water to the ballast tanks to submerge the boat and the air valves for blowing the tanks in order to bring her to the surface after a submerged run. The conning tower, surmounted by a bridge for surface navigation, is directly over this compartment. The commanding officer stationed in the central compartment can run up his periscope from time to time for an observation and at the proper moment fire the torpedo. Men are stationed at the steering wheel to control the course of the boat and at the diving rudder control wheels to control its depth and course in a horizontal direction. In fact, practically everything in the boat can be controlled from this compartment.

Following the central compartment is the engine-room where the twin Diesel engines that drive the boat on the surface are placed. Aft of the engines are the electric motors for driving the boat when submerged. Here also are located the air compressors, pumps and other miscellaneous auxiliaries. The ballast tanks for flooding with sea water when submerging are located under the central compartment and under the battery in single hull boats. In double hull boats, as already mentioned, the ballast is carried between the two hulls. Smaller tanks for controlling the trim of the boat when under water are located at the bow and stern. The fuel for the Diesel engines is carried in tanks built into the hull; generally part or all of the fuel is carried under the engine.

A submarine, unlike a surface boat, requires two distinct power plants, one for surface propulsion and the other for submerged running. Diesel engines are almost universally used for surface power but cannot be used submerged on account of the enormous amount of air that they require and because of the appearance of the exhaust on the surface. Several methods have been proposed for using the engine submerged by carrying large quantities of compressed air, but so far, I believe, have not been put into successful operation.

For submerged power storage batteries and electric motors are used. The distance that a submarine can travel submerged depends upon the capacity of its battery. Most submarines are capable of a submerged speed of 10 to 11 knots for one hour or at lower speeds for a longer time. Thus a storage battery has a certain capacity in kilowatt hours and

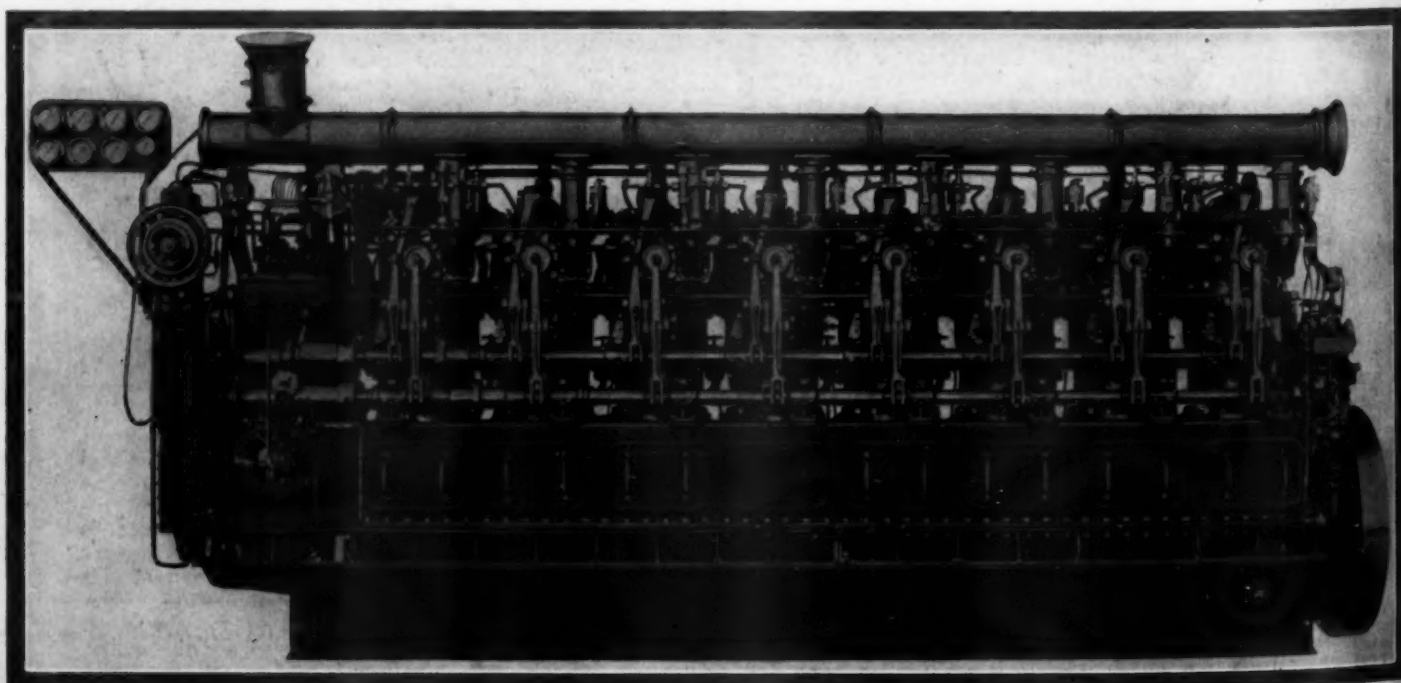


A hitherto unpublished photograph of Deutschland showing conning tower and deck station. Note the clearing lines

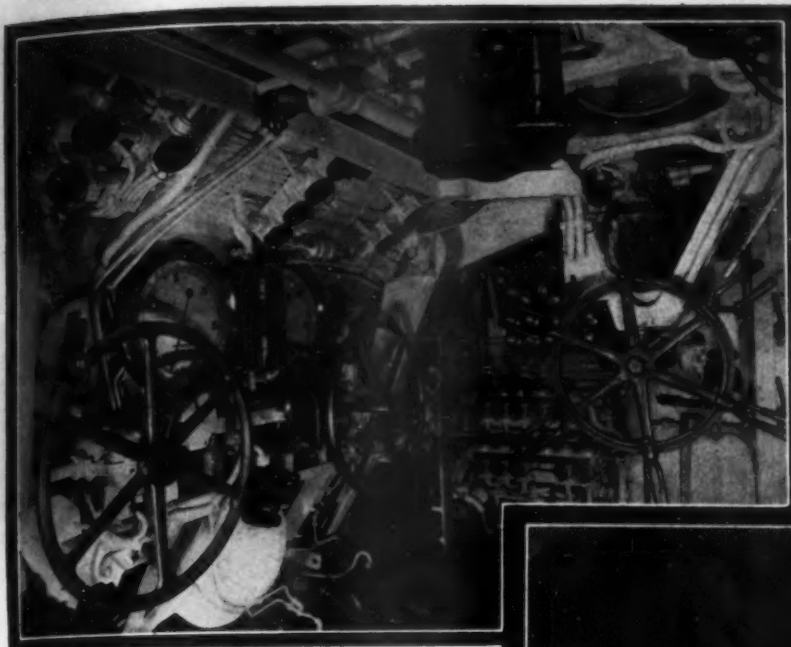
if a high rate is required as at high speeds the time of discharge is short. On the other hand, if the submarine is run at a low speed, a smaller power is required and the time of discharge is greatly increased. Many submarines are capable of traveling a hundred miles at a low speed of 4 or 5 knots. After the battery has been discharged the submarine must come to the surface and charge it with the Diesel engines, using the motors as generators. This charging operation requires from four to eight hours, and it is then that the submarine is liable to capture. As nearly all submarines are twin screw, it is possible to run under one engine, using the other for charging the batteries.

Besides the two power plants mentioned above all submarines are equipped with a compressed air system consisting of air compressors and air storage flasks for storing air under high pressure. This air is used for blowing the water out of the ballast tanks when it is desired to reach the surface condition quickly, for discharging the torpedoes from the tubes and for the motive power of the torpedoes themselves. Generally on emerging one small ballast tank is blown by air and the others emptied with pumps, thus conserving the compressed air supply.

Let us now turn our attention to the power plant of the submarine—the Diesel engine. The submarine's development in recent years has practically hinged on the Diesel engine, and today one of the main things that limits the size of the submarine is the ability to produce a submarine Diesel engine



A 600 h.p. four-cycle Nlesco Diesel submarine engine



The central station of a submarine. Note the base of the periscope

of sufficient power. The Diesel engine, as we know, was invented in Germany and the Germans have led in the development of this type of engine, and this is one reason for their wonderful success with the submarine. The early submarine boats were small affairs driven by gasoline engines, but this type of engine was discarded as soon as the Diesel made its appearance and to-day practically all the world's submarines use this type of engine for surface propulsion. There are a few high-speed steam submarines in service in Europe, but these have been built only because it has been impossible to produce a Diesel of the power required on the limits of space and weight allowed by these boats. No doubt in time larger Diesel units will replace steam in the high-speed submarines.

The Diesel type engine is certainly the ideal engine for a submarine on account of its low fuel consumption, compactness, absence of excessive heat radiation and

ease of stopping and starting. This last characteristic, coupled with absence of smoke pipes, etc., is most important as it allows quick submergence. Thus if the boat is running full speed on the surface and a quick submergence is required, the engines are shut off, the exhaust stop valves closed and the electric motors started, all of which can be done while ballast tanks are being flooded and hatches closed; and in a few minutes after the signal is given the boat will be under way submerged. Like the gasoline engine the Diesel engine is built in both the two- and four-cycle types, the four-cycle engine being the more popular. Revolutions range anywhere from 500 to 350 per minute for the submarine engines, but the tendency to-day is for a slow-speed reliable engine, and speeds of over 400 r.p.m. are seldom met with. Weight per horsepower varies between 60 and 100 pounds, depending upon the type and r.p.m.



The motor room of a foreign submarine built in this country

Nearly all submarine engines are built with trunk piston and separate cylinders. The cylinder bedplates and housing are of cast iron, although in some cases bronze bedplates and housing are used. All start on compressed air and many of them are reversible, reversing the engine and shifting the cams being also accomplished by compressed air.

The engine used almost universally in the American submarines is the Nlsec, built by the New London Ship and Engine Co. That this make of engine drove the ten English submarines built in Canada across the Atlantic and that a Spanish submarine recently crossed to Spain under her own power driven by two engines of this make speaks well for the reliability of this machine.

(Continued on page 54)



Torpedo compartment showing the spare torpedoes and one of the torpedo tubes open for loading

Keeping Up with the Reserve

A Few Notes on the Progress of the Motor Boats and Boatmen of the Coast Defense Naval Service—Huge Barracks Authorized for the Reservists at the Newport Training Station

THE third month of our participation in the world war found the Navy better organized for active duty than any other branch of the governmental service. With Congress dilatorily making up its mind whether or not it would have a compulsory army and then wasting weeks over inconsequential details, the United States Navy and its auxiliary, the Naval Coast Defense Reserve busied themselves in recruiting their full quota of numbers.

books. There is still need, however, for motor boatmen who can take the wheel or handle a marine engine, or who boast more than a superficial knowledge of Navy signaling.

It must be confessed that conditions in the Reserve bases in the big cities are not of the best from the standpoint of the Reservist, for the reason that lack of quarters and training facilities has made it impossible to call any great number of men for immediate service.

chafes at being held "in neutral," so to speak, while waiting for the call.

At the Newport Training Station, where the work of the Reserve seems to be progressing fully as favorably as in any other district, affairs were also rapidly approaching a stalemate, but we have received word from headquarters that the Navy Department has now authorized the building of a new barracks to accommodate the Reservists. Work

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Learning the semaphore code by opposites. In the front rank the men are practicing the letter N, and in the rear rank U

The main drive for recruits in the Reserve is now practically over, thousands of patriotic citizens having offered their unconditional services in every Naval district. New York has enrolled more than 4,000 men, and accepted and surveyed hundreds of motor boats, Philadelphia is close behind, and the Charlestown Navy Yard at Boston has closed its

Having made every arrangement for leaving civil life and becoming a part of the nation's fighting forces, a man

Naval Reservists eating dinner on the steps of one of the barracks at the Newport Training Station



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Sanitation is one of the first articles of the Navy's code. Airing hammocks on the dock rail at Newport

on this building is already under way, and when completed it will provide quarters for a thousand Reservists. This number, added to the men who are already on active service at Newport, will make the base a powerful factor in dealing with the submarine and in guarding the eastern approaches to New York City and the Connecticut manufacturing district.

A word to the unwise may be beneficial at this juncture. Some men there are who think that war with Germany means to Americans little more than a chance to get rich, to be well fed, or to put in a carefree summer in coastwise patrol duty—according to their individual aspirations. Belonging in the last category are some who have never had experience with motor boats, but who consider, nevertheless, that the Naval Reserve needs just such men as they, especially if they club together and form the self-styled crew



A signal class aboard the U. S. S. Boxer taking time off for photographic purposes

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of a motor boat which shall be donated by some

it plainly, certain men who have enrolled with boat and amateur crew have considered them-

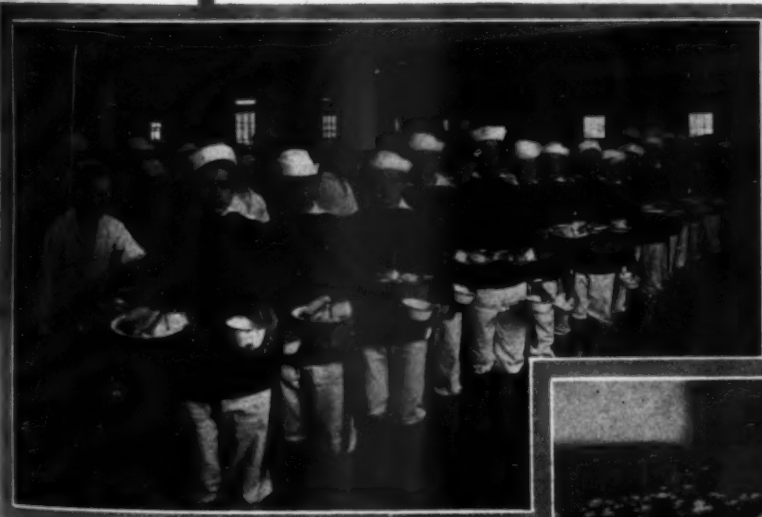
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selves of a class apart from the average man who has only his own services and his life to offer, and have displayed a reluctance to be

bound by the details of shore training. For them an unofficial word of warning should be sufficient; it will be pleasanter, at any rate, than a peremptory summons aft and some hot verbal shot from the commandant. This is neither a poor man's war that we are engaged in, nor a rich man's plaything. There is plenty of work for all, and all who have been called must do that work. The ranks and ratings of the United States Navy have long been in effect—and you won't find the dollar sign among the insignia.

With such difficulties as these disposed of, however, we have great faith that the motor boatman will soon be adding to his peace time laurels the enduring wreath of fame.

Meals are eaten outdoors in pleasant weather, Reservists and enlisted men helping themselves to food and coffee



By the cafeteria system recently put into effect at Newport a full meal can be distributed to 2,000 men in twelve minutes

patriotic citizen. Such men will be inured to disappointment before ever they set foot on deck of a naval auxiliary, because the authorities haven't the time to effect introductions between them and philanthropic boat owners.

There are others also who have boats of their own which are suitable for the Government's purposes and who have been accepted, together with their craft and friends. Such men are valued by the Reserve officials, but there is a growing conviction among the authorities that riches alone do not make navigators, quartermasters, cooks or able-bodied seamen. To put



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Answering the S. O. S.



Painting by William H. Foster

Air Fleets to Protect Commerce

The Seaplane and Naval Dirigible of Utmost Importance in Protecting Shipping Lanes and in Carrying the War into the Enemy's Country—Vast Sums Spent for Aerial Equipment

By Henry Woodhouse

Author of "The Textbook of Naval Aeronautics."

THE British government is spending \$575,000,000 for aeronautics this year. The report of the British controller of aeronautical supplies shows that there are 958 firms engaged in aeronautic work for the British government. Of these, 301 are direct contractors and 657 are sub-contractors. The total number of hands employed by the fifty firms of most importance is 66,700. Great Britain is producing 4,000 aeroplanes a month.

The French are not far behind, although we hear very little of their work. On May 26 Admiral Lacaze, the French Minister of the

bombs, torpedoes, and guns. (Seaplanes and dirigibles used.)

Bombed the enemy's bases and stations. (Land aeroplanes, seaplanes, and dirigibles.)

Attacked the enemy's aircraft in the air. (Aeroplanes and seaplanes used.)

Served as the eyes and scouts of fleets at sea. (Dirigibles, seaplanes, and kite balloons used.)

Protected ships at sea and in port against attacks from hostile submarines and battle-ships. (Seaplanes and dirigibles used.)

Defended and protected naval bases and stations from naval and aerial attacks. (Land aeroplanes, seaplanes, and dirigibles used.)

Convoyed troop ships and merchant ships on coastwise trips. (Dirigibles and seaplanes used.)

Patrolled the coasts, holding up and inspecting doubtful ships, and conveying them to examining stations and searching coasts for submarine bases. (Dirigibles used.)

Prevented hostile

destroying mines. (Dirigibles, seaplanes, and kite balloons used.)

Served as the "eyes" in planting mines, minimizing the time required for mine planting. (Dirigibles, seaplanes, and kite balloons used.)

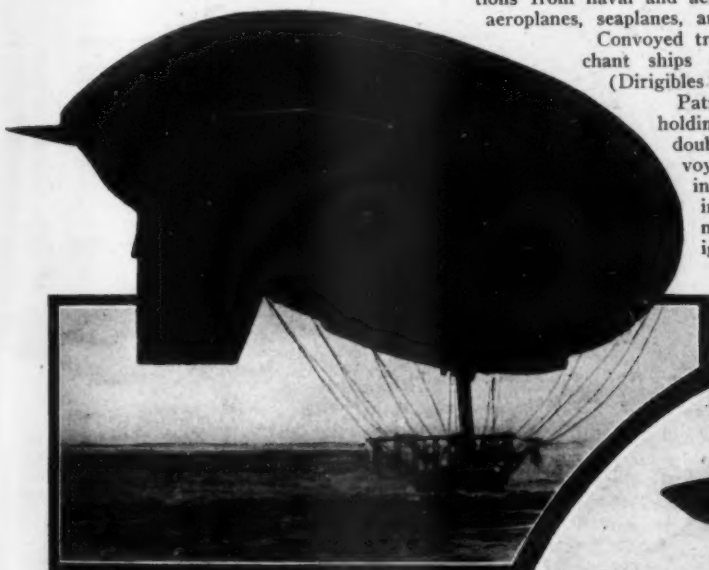
Served as "spotters" in locating the position of the hostile ships and directing gunfire. (Dirigibles, seaplanes, and kite balloons used.)

Served as carriers of important messages between ships which could not be entrusted to wireless owing to the possibility of the enemy wireless picking up the messages, such as communicating to incoming ships information regarding the location of mines, submarines, and courses, to avoid mistakes and confusion. (Seaplanes and dirigibles used.)

Carried out operations over land and sea intended to divert the attention of and mislead the enemy while strategical operations were being carried out by the fleet of squadrons. (Land aeroplanes, seaplanes, and dirigibles used.)

Made it possible for commanders to get films of theaters of operation, photographs of the location, composition and disposition of hostile naval forces, and photographic records of condition and of the movements and operations of their own as well as of the hostile naval forces.

We are going to need aircraft in number to check the submarine menace near our coasts,



The U. S. Navy dirigible D. N. 1, built by the Connecticut Aircraft Co., starting on her



maiden trip on the Florida Gulf Coast. At the right: The 125 h.p. Wright-Martin seaplane owned by Ensign Thorne Donnelley, of the Aeronautic Division, 3rd Battalion, N. Y. N. M.

Navy, told the French House of Deputies, among other things:

"We have organized aerial coast patrol stations all around our coasts, so that the zone of action of each post joins that of its neighbors on the other side." England has 107 aerial coast patrol stations. France has probably as many.

The naval air service of the warring countries is divided into three distinct, separate branches, whose functions are quite different, and which may be designated as (1) the offensive air service, which consists of the squadron of seaplanes, stationed on seaplane carriers, and aeronautic bases, which are used for air raids, independent of the fleet; also of dirigibles, which operate from bases; (2) the auxiliary air service of the fleet, which operates with the fleet, using ships as bases; and (3) the aerial coast patrol, which operates from naval stations and naval bases.

Naval dirigibles, aeroplanes and kite balloons have rendered the following services in the present war. They have:

Attacked ships and submarines at sea with

aircraft from locating the position and finding the composition and disposition of the fleet, getting the range of ships, naval bases, station, magazines, etc. (Land aeroplanes and seaplanes used.)

Located, and assisted trawlers, destroyers and gunners in capturing or destroying hostile submarines. (Seaplanes, dirigibles, and kite balloons used.)

Co-operated with submarines, guiding them in attacks on ship. (Dirigibles and seaplanes used.)

Located mine fields and assisted trawlers in

which will draw nearer to us as soon as we begin to ship in volume.

The value of aircraft for hunting submarines has not been sufficiently appreciated in the United States, and the Allies cannot get aircraft enough for their patrols.

The submarine menace can be checked by present-day aircraft. In any discussion of what can be done against the submarine, there must first be stated whether we mean the protection of ships at sea or when they are on coastwise trips. Nothing else could protect the sea lanes so well as large dirigibles, capable, as the Zep-

pelines are, of cruising for 3,000 miles without stopping.

Unfortunately, no country outside of Germany has large dirigibles for use for this purpose. If we had them they could be used to patrol the ship lanes daily. No submarine would be safe, no matter where at sea, with large dirigibles patrolling, because large dirigibles carry guns of sufficient caliber to sink a submarine with a single shot. Likewise, the observers from a dirigible, as in the case of an observer from an aeroplane, can see a submarine miles away, when a man from a ship cannot see it, and as the airship travels many times faster than the submarine and the submarine could not easily detect the approach of the airship, the submarine would stand no chance.

Unfortunately, the Allies are far from being in a position to patrol the sea lanes with a large number of airships, although there is a possibility that Great Britain will put some into service within a few months.

The submarine menace can be checked by present-day aircraft—seaplanes, small dirigibles, and kite balloons. We are now building large seaplanes which are capable of carrying fuel for continuous flights of over fifteen hours and of going at a speed of over 75 miles an hour. American manufacturers have supplied quite a number of large seaplanes of this type to England, and, as C. G. Grey, the editor of the *London Aeroplane*, has pointed out, "If America is seriously perturbed about the fate of American shipping and American citizens traveling at sea, it should not be a difficult matter for America to rig up in a very short space of time quite a fleet of aeroplane carriers suitable for handling these big seaplanes."

for their aerial coast patrols, besides the aviators who are being sent to fight with the Allies' aviators. It is just as important to "strike Germany through the air" by striking the U-boats as it is to blind the German artillery by keeping the skies clear of German aviators, helping the infantry in capturing the trenches by turning the aeroplane guns on the Germans in the trenches, and then dropping tons of explosives on German bases.

To help our Allies in striking Germany through the air and to protect our shipping and our shores from U-boat attacks we must take steps immediately to train 10,000 aviators and manufacture about 100,000 aeroplanes. This is a big undertaking, withal not beyond our manufacturing possibilities.

To supervise the important work of arranging for training the aviators and manufacturing the machines there has been created the Aircraft Production Board, the members of which are: Howard E. Coffin, Brig. Gen. George O. Squier, Chief Signal Officer, U. S. A.; Rear Admiral D. W. Taylor, Chief of the Bureau of Construction, U. S. N.; S. D. Waldon,

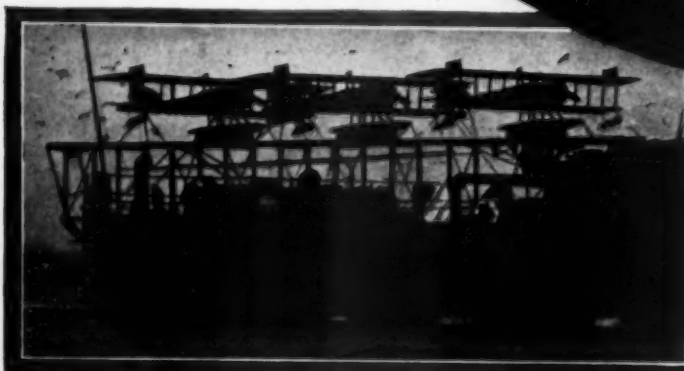
where orders are to be placed, to aid in arranging with American factories for the kind of machines best suited to their several organizations and facilities for manufacture, to advise in the matter of priority of deliveries of aircraft material in accordance with a general policy as determined by the Council of National Defense, and, following the selection of sites for aviation schools and supply depots by the Military Department, to advise in regard to buying or leasing the land, preparing it for use and erecting all buildings.

The Aircraft Production Board is acting in the closest co-operation with the War and Navy Departments, especially with the recently created

Joint Army



The 125 h.p. Aeromarine seaplane built for the U. S. Navy. This type of machine is also being used by Rear Admiral Bradley A. Fiske for his experiments in launching torpedoes



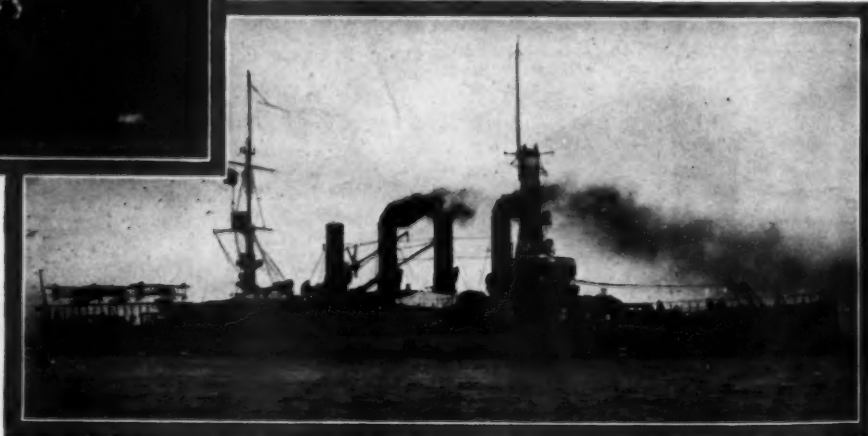
Nearer view of the launching platform on the U. S. S. Seattle. Three seaplanes are shown in position

Every troop and supply ship which has crossed the channel since the beginning of the war has been convoyed by aircraft. Hundreds of dirigibles and aeroplanes are being employed now in co-operation with destroyers, trawlers and submarine chasers in destroying hostile submarines and searching coasts for submarine bases. The wake of a periscope is not easily seen from ships, but is always clearly visible from aeroplanes. A submarine can easily be seen when submerged to a depth as great as 100 feet in clear weather and water. In water which is less clear the submarine is visible at a depth of from twenty to thirty feet.

Light aircraft guns up to three inches in caliber are being manufactured to enable seaplane pilots to shoot at the submarine, as well as bomb it. The submarine, unless it happens to be on the surface with guns ready to fire, stands little chance to fight back at an aeroplane mounting even a small gun or equipped with bombs.

The principal value of aircraft, however, is in locating and following the submarine and summoning destroyers, trawlers, or chasers to bag it when it rises to the surface, without destroying it.

The Allies will welcome the United States' assistance in supplying aircraft and aviators



U. S. S. Seattle, which like the North Carolina, is equipped with aeroplanes and a launching platform

former vice-president of the Packard Motor Car Co.; E. A. Deeds, former general manager of the National Cash Register Co., afterwards with the Dayton Engineering Laboratories Co., and head of the Miami Conservation District, formed to guard against a repetition of the Dayton flood, and R. L. Montgomery, senior member of the Philadelphia firm of Montgomery, Clothier & Tyler, who is serving as financial and business adviser of the Board.

The general function of the Aircraft Production Board is to bring manufacturers together and help make their resources available to the Government and assist the Government in stimulating the production of better types and greater quantities of air machines, to investigate and recommend manufacturing plants

and Navy Board on Design and Specifications, which has been entrusted by the two Secretaries with discretion on all questions of design and specifications in all forms of military aircraft except Zeppelins. The membership of this Joint Board includes the following: Major B. D. Foulis, U. S. A.; Captain V. E. Clark, U. S. A.; Lieut. A. K. Atkins, U. S. N.; Lieut. Comm. H. H. Towers, U. S. N.; Asst. Naval Constructor J. C. Hunsaker, U. S. N.; Captain E. S. Gorrell, U. S. A.; Henry Souther, the consulting engineer of the Signal Corps, who will act in a similar technical capacity to the Aircraft Board.

To carry out the plan will probably take \$300,000,000. It is hoped that Congress will expedite matters by giving the full amount.

Naval Rank and Corps Devices

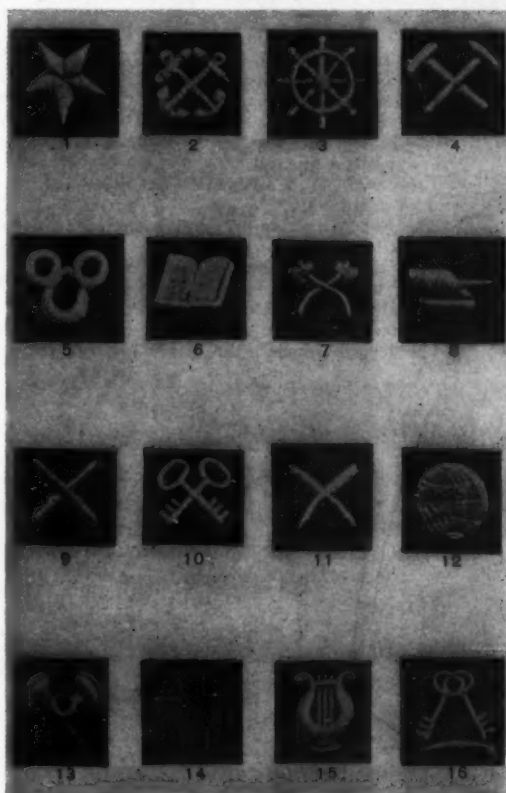
Concluding Article on a Subject of Particular Interest to Motor Boatmen—Insignia Worn on the Collars of Service Uniforms of Commissioned Officers—Specialty and Distinguishing Marks

PART II

IN addition to the sleeve marks by which the rank of each officer of the United States Navy may be determined (and which were explained in the June issue) the layman has other aids to identification in the devices embroidered on the collars of the service coat, the metal devices worn on the shoulders of the white service coat and the mess jacket, and the epaulets of the dress uniforms. Chiefly of interest to the motor boatman is the distinctive corps device of commissioned officers of the newly created Naval Reserve Force. This consists of two gold foul anchors under a silver U. S. shield and eagle.

In the large illustration at the bottom of this page may be seen the corps and rank devices which are embroidered on the collars of the service coats. The illustrations show the right side of the collar, and the left side differs only to the extent that the corps device and the rank device are transposed so that the rank device is still to the front. The leaves, anchors, etc., are inverted so that on the left side they also point to the front. Perhaps it would be a simpler explanation to say that these devices are made in rights and lefts, leaving the rest to the imagination.

The device in the upper left-hand corner is that of an Admiral of the Navy. This was the rank of Admiral Dewey, but it died with him, as no other officer has been elevated to his position. The rank of admiral is also nonexistent, but there are at the present time two vice-admirals, Admiral Sims, in command of our naval forces in the European War Zone, having only recently been raised by the President to this rank. The admiral's device is the same as that of the Admiral of the Navy

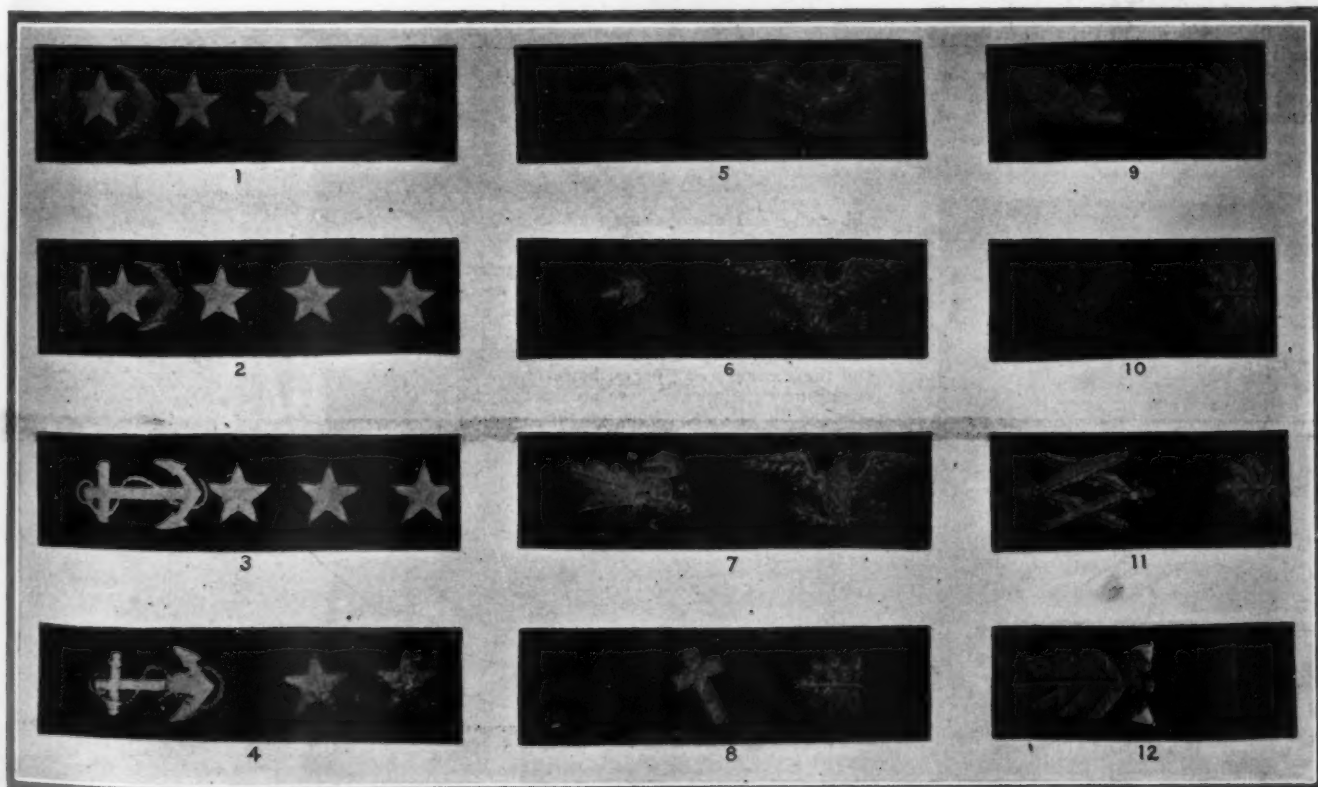


Specialty marks which will be seen on the arms of enlisted men in the navy

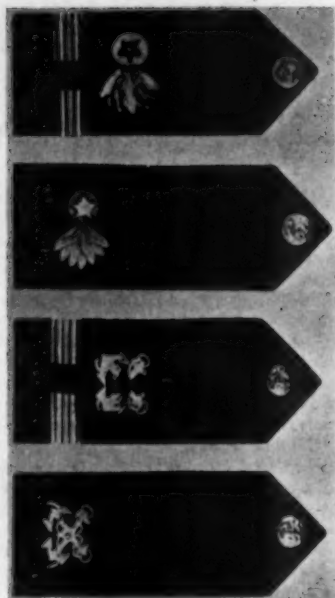
except for the omission of the foul anchor worn toward the front of the collar in the latter case. The vice-admiral's device differs only from an admiral's in the omission of the star surcharged on the foul anchor. The collar of a rear admiral (shown in Fig. 4) is embroidered with the foul anchor and two instead of three stars. All of the above emblems are embroidered in silver.

All commissioned officers of the line (as opposed to staff officers) wear the silver foul anchor, and the anchor itself, therefore, does not bear any relation to the rank of the officer wearing it. The rank is denoted by a series of devices, and that shown at the top of the center column marks the wearer as a captain. Although the collars of other line officers are not shown in the cuts, they are as follows: Commander, silver oak leaf; lieutenant commander, gold oak leaf; lieutenant, two silver bars; and lieutenant junior grade, one silver bar. The silver foul anchor, as stated above, is worn in rear of each of these devices, and ensigns, whose rank does not entitle them to distinctive insignia, wear only the anchor.

Commissioned staff officers (Figs. 6 to 11), except chief carpenters, chief sailmakers, and chief pharmacists, wear devices identical with those of the line officers with whom they rank, except for the substitution of the proper corps device for the anchor. Thus, Fig. 6 shows the insignia of a medical officer with the rank of captain; Fig. 7, a captain of the pay corps; Fig. 8, a chaplain with the rank of commander, and Figs. 9, 10, and 11, professor of mathematics, naval constructor, and civil engineer, respectively, with the rank



Collar devices worn on the right side of the service uniforms of commissioned officers. The emblem at the right in each instance marks the rank of the officer wearing it, and the device at the left (or to rear) denotes the corps to which he belongs. (See text for explanation)



Warrant officers' shoulder straps. From top to bottom: Chief gunner, gunner, chief boatswain and boatswain

of commander or lieutenant commander according to whether the oak leaf is embroidered in gold or silver—which cannot be determined from the illustrations. Fig. 12, in the lower right-hand corner, is the device of a dental officer with the rank of lieutenant. The collar devices of chief warrant officers, warrant officers, mates, and paymaster's clerks were described and illustrated in the preceding instalment.

For all commissioned officers except chaplains and chief warrant officers, epaulettes are prescribed for wear with the frock coat, and these conform to the patterns for the collar devices except that unsymmetrical corps devices (made in rights and lefts) are so placed that the side which is uppermost on the service coat collar is to the front on the epaulet, except that the device of naval constructors is placed with the long dimension at right angles to the axis of the epaulet. The eagle of captains' rank is so placed that the wings are fore and aft with the arrows pointing to the front. There are other details entering into the design of epaulettes—such as the

proper length of the bullion, or gold tassels—but a knowledge of these is not vital to the motor boatman, whose duty upon meeting a naval officer is not so much to pass judgment upon the correctness of his raiment as to recognize his rank and corps, gaze with awe and pass on.

The following description of the various corps devices will, however, be of help in learning to differentiate between them:

Medical Officers—A silver acorn leaf over a gold oak leaf.

Medical Reserve Officers—A gold acorn leaf over a silver oak leaf.

Pay Officers—A silver oak sprig of three leaves and three acorns.

Chaplains (collars only)—A silver Latin cross inclined backward at an angle of 15 degrees from the vertical.

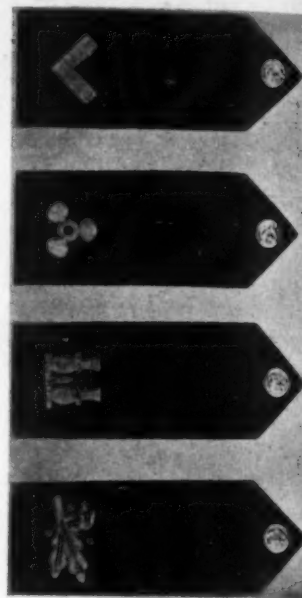
Professors of Mathematics—A silver oak and an acorn.

Naval Constructors—A gold sprig of two live-oak leaves and an acorn.

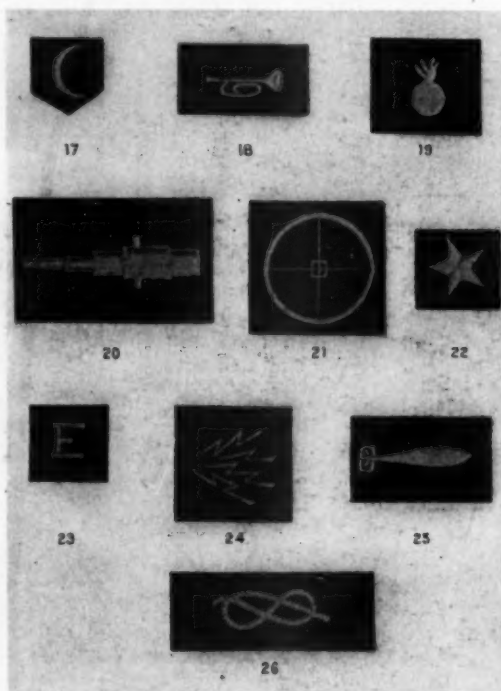
Civil Engineers—Two crossed silver sprigs, each of two live-oak leaves and an acorn.

Dental Officers—A gold spread-oak leaf with a silver acorn on each side of the stem.

The devices shown in the illustrations of the



Warrant officers' shoulder straps. From top to bottom: Carpenter, warrant machinist, mate, and pay clerk



Specialty and distinguishing marks worn by enlisted men

shoulder straps of commissioned and warrant officers are sufficiently like the collar devices already mentioned in this and the preceding issue to render a detailed description of them unnecessary. In the two central illustrations on the accompanying pages, however, we find many new emblems. These are specialty and distinguishing marks worn on the sleeves of enlisted sailors who have demonstrated their aptitude or ability along different lines.

These are numbered consecutively from 1 to 26, and an explanation of them follows:

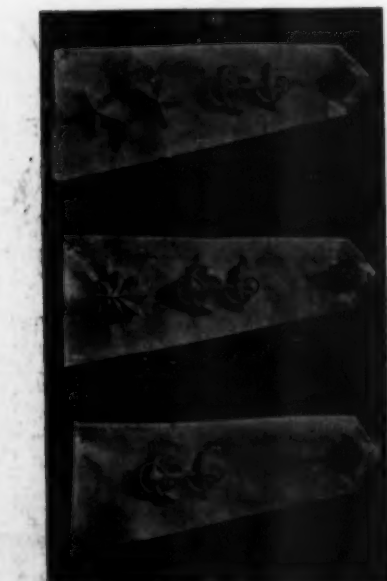
Specialty Marks

- Fig. 1—Master-at-arms.
- Fig. 2—Boatswain's mates and coxswains.
- Fig. 3—Quartermasters.
- Fig. 4—Blacksmiths and ship fitters.
- Fig. 5—Sailmakers' mates.
- Fig. 6—Printers.
- Fig. 7—Carpenters' mates, plumbers and fitters, and painters.
- Fig. 8—Turret captains.
- Fig. 9—Gunners' mates.
- Fig. 10—Chief yeomen.
- Fig. 11—Yeoman, first, second, and third class.
- Fig. 12—Electricians.
- Fig. 13—Machinists, mates, boiler makers, water tenders, coppersmiths, and oilers.
- Fig. 14—Hospital stewards and hospital apprentices.
- Fig. 15—Bandmasters and musicians.
- Fig. 16—Commissary stewards.
- Fig. 17—Ship's cooks and bakers.
- Fig. 18—Buglers.

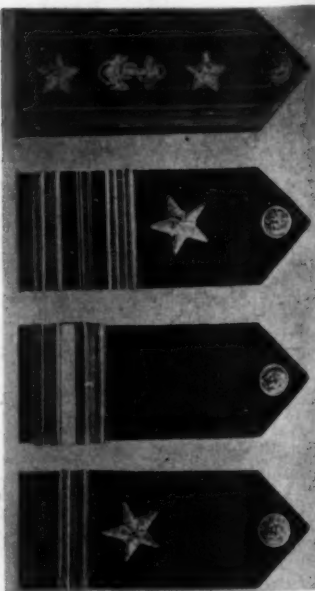
Distinguishing Marks

- Fig. 19—Seaman-gunner.
- Fig. 20—Gun captain (except secondary battery gun).
- Fig. 21—Gun pointer, second class.
- Fig. 22—Gun pointer, first class (worn over Fig. 21).
- Fig. 23—The Navy E, worn by members of turret, gun, and torpedo crews that make exceptionally high scores on record target practice, and by men of the engineering division whose ship wins the annual trophy in the engineering competition. The color is white on blue uniforms and blue on white uniforms for gunnery and torpedoes, and red on all uniforms for engineering.
- Fig. 24—Radio operators.
- Fig. 25—Worn by gunner's mates, second class or higher, qualified in torpedoes and mines.
- Fig. 26—The ex-apprentice's mark, worn by all enlisted men who have passed through the rating of apprentice in the Navy.

Enlisted men without rating, but belonging to certain corps, are entitled to wear the corps device in place of the rating badge. Thus shipwrights wear the specialty mark of the carpenter's mate (Fig. 7), hospital apprentices wear a Geneva cross of red cloth, and signalmen, first and second class, have the device of quartermaster (Fig. 3). Ship's cooks, third and fourth classes wear the same specialty mark as ship's cooks, first class, without eagle or chevrons.



Metal insignia worn on the shoulder of white service coats. From top to bottom: Rear admiral, commander, and ensign



Shoulder straps of commissioned officers. From top to bottom: Rear admiral, lieutenant commander, paymaster (lieutenant), and ensign

An Important Naval Auxiliary

S. P. 54, the 63-Foot Patrol Boat Turned Over to the Government by Hermann Oelrichs and Commanded by Him at the Newport Base—Fitted With Wireless and Gyroscope Stabilizer

ACCORDING to a report submitted by the service manager of the concern whose motors are installed in Hermann Oelrichs' patrol cruiser, this unit of the Sectional Patrol has already undertaken anti-submarine duty. To quote the report: "On Friday evening, June 1, the Navy Department sent a hurry-up call to the Greenport Basin & Construction Co., stating that a German submarine had been sighted off Montauk Point, and instructing them to get busy at once. Within the hour the Greenport boat No. 63 and Mr. Oelrichs' boat S. P. 54, each equipped with a pair of eight-cylinder Duesenbergs, were rushing to the spot. All during the night a patrol was kept up from Long Island to the mainland, and, while no submarine was sighted, the crews of both boats received their first experience of scout duty. It is interesting to know in this connection that Mr. Oelrichs' boat had just made the trip

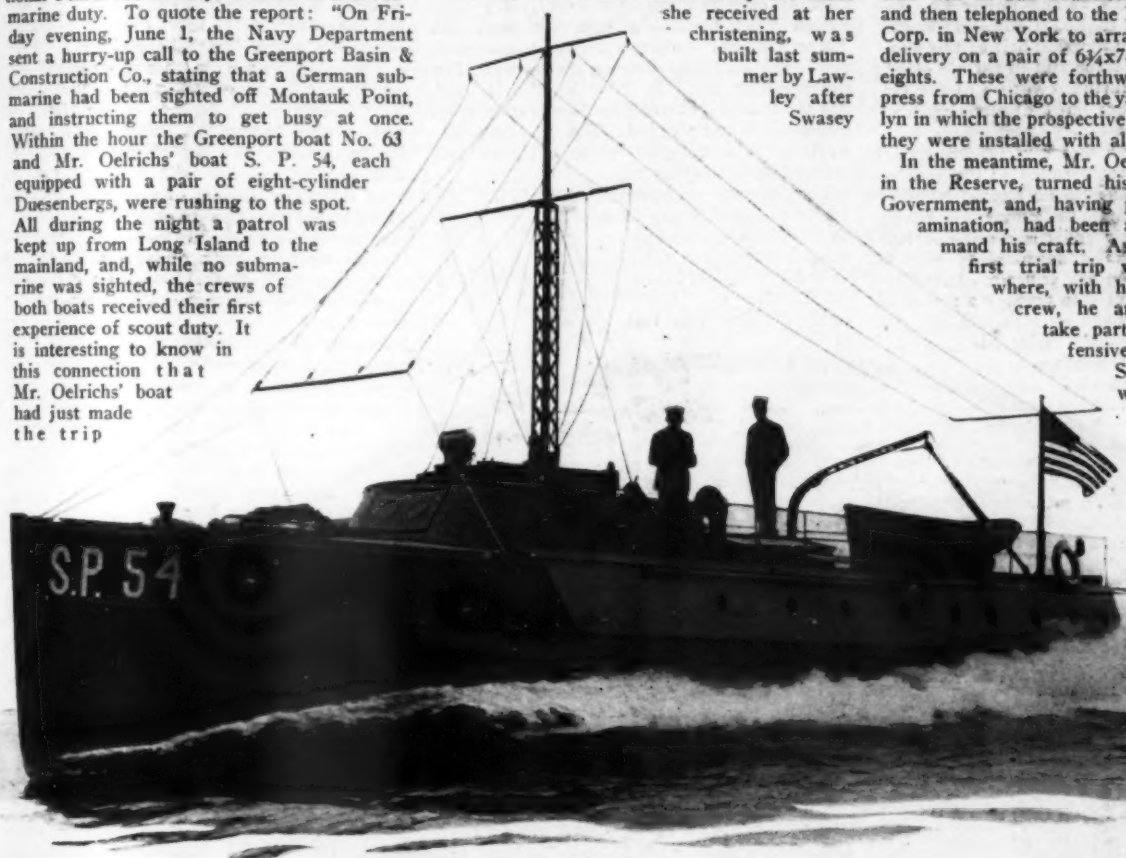
from New York to Greenport as her initial trial with her new power plant, and was in perfect condition for the service demanded of her by the Navy Department that evening."

Bonita, to call this 63-footer by the name she received at her christening, was built last summer by Lawley after Swasey

plans, which included the possibility of chaser service in their conception. At the time war against Germany was declared, she was without a suitable power plant, but her owner, who was in San Francisco, first telegraphed and then telephoned to the Duesenberg Motors Corp. in New York to arrange for immediate delivery on a pair of 64x734-inch Duesenberg eights. These were forthwith shipped by express from Chicago to the yacht basin in Brooklyn in which the prospective patrol boat lay, and they were installed with all possible despatch.

In the meantime, Mr. Oelrichs had enrolled in the Reserve, turned his boat over to the Government, and, having passed a rigid examination, had been appointed to command his craft. As above stated, his first trial trip was to Greenport, where, with his newly recruited crew, he arrived in time to take part in an actual defensive maneuver.

S. P. 54 is equipped with a powerful wireless outfit and has a Sperry gyroscope stabilizer in her engine-room.



S. P. 54, the Swasey-Lawley cruiser, formerly owned and now commanded by Hermann Oelrichs, is now on patrol duty in the 2nd Naval District, operating out of Newport. She is powered with two eight-cylinder Duesenberg motors which give her a speed of 22.5 knots, and a most notable feature of her equipment is a Sperry gyroscope stabilizer. Launched last year, she was christened Bonita



Wireless room of S. P. 54. While the size of this patrol boat is not up to the minimum declared necessary for effective submarine fighting, her seaworthiness and all-around serviceability are such that she is an extremely valuable unit in the Sectional Patrol



Pilot-house of Mr. Oelrichs' patrol boat. On the day of her trial trip with her Duesenberg motors she was called for duty in response to a report that a German submarine had been sighted off Montauk

The Speedway Scout Cruiser

A 52-Foot Stock Model Which Has Met With the Approval of the Naval Authorities No Less Than With That of Private Owners—Speeds of 25 Miles an Hour and Up Attained

SIX duplicates of the 52-foot express cruiser shown in the accompanying illustrations have been inspected, approved, and accepted by the naval authorities—which is a pretty good tribute to both the craft and her builders, the Gas Engine and Power Co., and Chas. L. Seabury & Co., Cons., of Morris Heights, N. Y. The fact that half of this number were inspected while still in various stages of construction is further evidence of the Department's confidence in the correctness of Seabury work.

While essentially a motor yacht, this model is considered admirably suited to the uses of the Sectional Patrol, and no alterations were considered necessary by the authorities. In its design this big stock model is considered representative of the most advanced theories in the planning of express cruisers. Considerable care was exercised to produce a model of splendid weatherly qualities with sufficient stability to be comfortable under adverse conditions of weather.

The coefficients are such as to permit a speed of 25 miles an hour without "over-

powering," consequent loss in efficiency and economical operation.

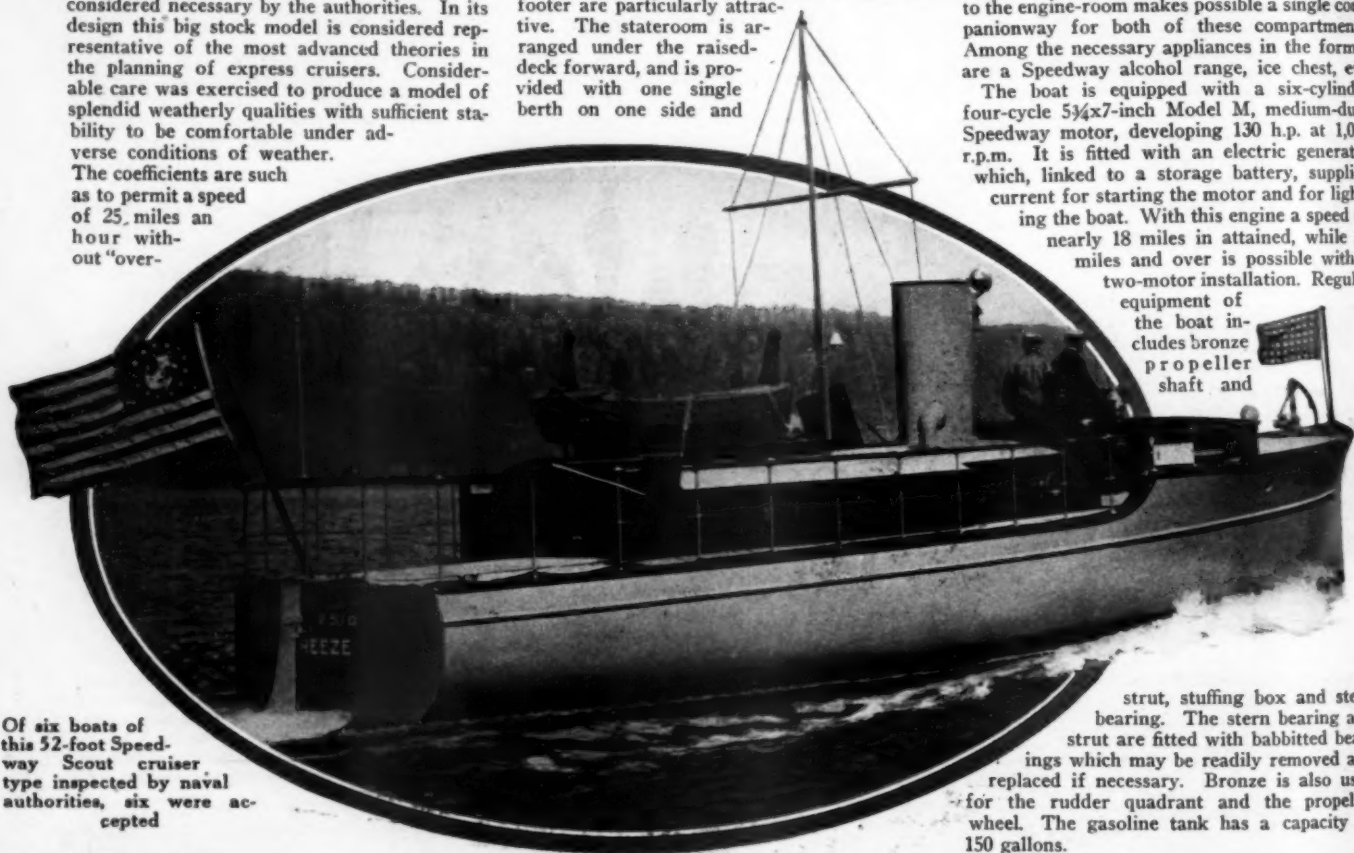
The construction embodied in this cruiser shows experience gained from the building of nearly 2,600 boats. The hull is substantially built of oak, and the keel and frames reinforced by the usual stringers, clamps, etc. Three diagonal double water-tight bulkheads divide the boat into four compartments. For the planking cedar in long lengths is used, and the fastenings throughout are brass screws, countersunk and plugged. The interior joiner work is in white pine, white enameled and relieved by mahogany trim.

The interior accommodations of this 52-footer are particularly attractive. The stateroom is arranged under the raised-deck forward, and is provided with one single berth on one side and

hinged berth opposite. The alternate optional arrangement is an extension transom to port and in the space on the starboard side is a bureau, wardrobe and desk. Partly under the bridge is a comfortable athwartship berth, while in the forward end of the compartment is a completely fitted toilet room, the door of which has a full length beveled glass mirror.

The cabin has a wide transom on either side, which may be converted into a 40-inch berth. Two wardrobes are built in at the after end, and forward to port is a buffet with a cabinet locker opposite. The lavatory on the starboard side is fully equipped with the latest type of plumbing. The location of the galley adjacent to the engine-room makes possible a single companionway for both of these compartments. Among the necessary appliances in the former are a Speedway alcohol range, ice chest, etc.

The boat is equipped with a six-cylinder four-cycle 5½x7-inch Model M, medium-duty Speedway motor, developing 130 h.p. at 1,000 r.p.m. It is fitted with an electric generator which, linked to a storage battery, supplies current for starting the motor and for lighting the boat. With this engine a speed of nearly 18 miles is attained, while 25 miles and over is possible with a two-motor installation. Regular equipment of the boat includes bronze propeller shaft and



Of six boats of this 52-foot Speedway Scout cruiser type inspected by naval authorities, six were accepted

Photographs by Rosenfeld



The interior finish is in white enamel with mahogany trim, and its quiet taste is well shown in this picture by reason of the fact that the furnishings were incomplete at the time of its taking



The equipment of the Speedway 52-footers is complete to the last detail. Bronze underwater fittings, brass binnacle and deck hardware, and brass screws for the fastenings are used

strut, stuffing box and stern bearing. The stern bearing and strut are fitted with babbitted bearings which may be readily removed and replaced if necessary. Bronze is also used for the rudder quadrant and the propeller wheel. The gasoline tank has a capacity of 150 gallons.

MY IDEAL CRUISER

No. 6, The 32-Foot Dawn

A Two-Cabin Cruiser Which Has Been Designed to Give a Maximum of Comfort, Seaworthiness, and All the Other Cruiser Virtues

By Theo. E. Zeidler

THE water has always had a peculiar charm for me, and it was with the greatest interest that I stood as a child on the shores of the lake in New York's Central Park and watched the boys sailing their miniature craft over its dimpled surface. The wide stretches of the Atlantic enthralled me most, but lacking a "real" boat which could be sailed upon it, my supreme ambition was to own a small one which I could enter in friendly competition with those of the other boys of the Park.

This intense yearning for a boat has continually increased with the passing years, and while on the one hand I have given up my cherished hope of being the resplendent captain of an ocean liner, on the other I have advanced considerably beyond the stage of the white-sailed toy. As I grew old enough to wield a paddle, canoeing attracted me to the friendly surfaces of lake and river, and with increasing ability I was able to enjoy many hours in navigating sailboats of all sorts and descriptions. Finally the motor boat claimed me for its own, and, through weather which has ranged the entire scale from favorable to unfavorable, has piloted me through some of the happiest experiences of my life. In the course of my novitiate I dealt with many handicaps and dwelt with some hardships and while always feeling that motor boating is the sport supreme, I have come to realize that it can only attain its utmost perfection through the medium of an ideal cruiser, which, within its length limits, furnishes every comfort and convenience to mind and body. It is almost needless to say that my own "Ideal Cruiser" is not the mushroom growth of a day, but the gradual development of all the years that I have spent on the water, and that in my opinion Dawn, as I have named her, embodies all that could be desired—the maximum of comfort, seaworthiness, accessibility, ventilation, light, and a pleasing appearance.

Dawn, as shown in the accompanying plans, is a two-cabin, bridge-deck cruiser measuring 32 feet in overall length, and having a beam of 8 feet 6 inches and a draft of 3 feet. There is nothing radical in her makeup, either as to lines or interior arrangement, the intention of her design being to combine beauty with the highest degree of serviceability. She is

laid out with the usual "chain locker" forward (a rope box, as a matter of fact), and with a toilet compartment immediately aft. The forward cabin is that in which will center the activities of life aboard, for it is connected with the heart of the ship—the galley. Small though the latter necessarily be, it lacks neither stove nor ice chest, and I have a notion that the meals prepared in it and eaten from the folding table in the combination stateroom-saloon will meet with the approval of the entire crew, from skipper to cabin boy. This forward compartment is, of course, fitted with two berths for the owner's use, and these may be supplemented by

uppers if conditions seem to warrant it. A companionway leads from the starboard side to the bridge deck.

The space beneath this deck is occupied by the power plant, and as I have had two years' experience with a Gray Model D motor which has given me absolute satisfaction under all conditions, I intend to install one of this model in Dawn. Fitted with a three-bladed Columbia propeller of 18-inch diameter and 20-inch pitch, turning about 700 r.p.m., I expect my Gray to give me a speed of approximately 10 miles an hour, and inas-

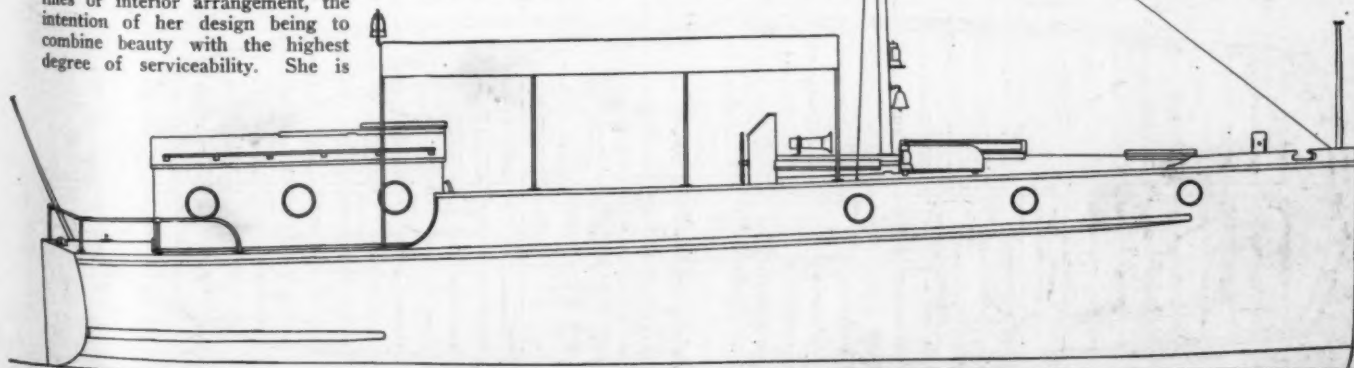
An Aside from the Editor

PUBLICATION of MoTOR Boating's fleet of Ideal Cruisers has now been going for six months, and we can't yet say when it will stop, so many and varied are the excellent designs which have come to the Editor's office. Early in April, when we were getting the May issue ready for publication, we thought that perhaps the series hadn't thoroughly introduced itself to our readers, and so extended the original time limit from May 1 to May 15, in order to give every germ of an idea opportunity to blossom out into an Ideal Cruiser. And after that came the deluge.

Consequently we have decided not to conclude the series with the publication of the sixth cruiser as we had originally intended, but to continue it indefinitely, or until all of the best designs have been published. In our interest in the boats themselves we have not forgotten that this is a contest and that the designer of the boat which is adjudged by our readers to be the flagship of the fleet in point of general merit will be awarded a prize of \$100 worth of equipment. Neither do we have to remind ourselves or our successful contestants that we are paying \$50 for each design deemed worthy of publication.

It seems to us a matter of interest that in none of the boats comprising the existing fleet of Ideal Cruisers has the designer shown any predilection toward speed. Length limits have differed somewhat, and up till now the single- and double-cabin types of craft have been almost equally divided (as equally as it's humanly possible to divide an odd number), but the conviction that a moderate speed is sufficient has been unanimously entertained by our amateur designers. The author of the accompanying article and plans is outspoken in his opinion that comfort is more to be desired than speed, and he sums up the *raison d'être* of his Ideal Cruiser when he declares that Dawn embodies "the maximum of comfort, seaworthiness, accessibility, ventilation, light, and a pleasing appearance."

Dawn somewhat resembles Sunray, the 36-footer which started the series, but she proves that a 32-foot double-cabin cruiser can be designed to possess practically the same accommodations as a larger craft. Except for the diminutive auxiliary, White Cap, which sailed her way into the April issue, and Flashlight (June), she is the shortest of the fleet.—Editor.

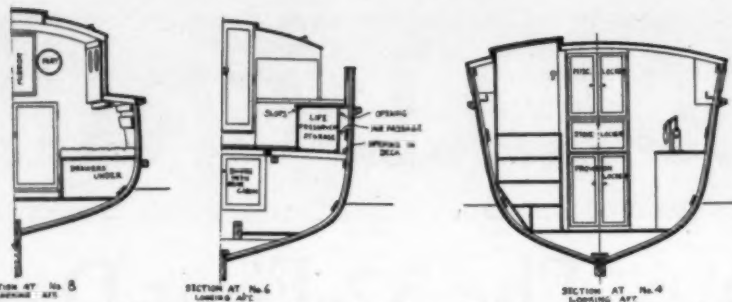


Dawn, the sixth of the Ideal Cruiser series, is a 32-footer with a central cockpit beneath which is placed a Model D Gray. Her outboard profile is here shown at a reduction of $\frac{1}{4}$ -inch to one foot

much as I prefer comfort to speed this rate will entirely satisfy me. The motor is equipped with an electric starter and all the controls are led to the steering wheel. In addition to the hand bilge pump which should form part of the equipment of every small cruiser, I shall be provided with a motor-driven pump.

The bridge deck is but half a foot shorter than it is wide (8 feet 6 inches) and so gives seating capacity for a sizable party without making any of the guests drape themselves about the forward deck to the detriment of canvas and appearance. It is equipped with side seats beneath which storage room is provided for the lawful equipment of life preservers, and two after seats which cover each a gasoline tank of twenty-five gallons' capacity. Entrance to the after cabin is gained by means of a short flight of steps above which is a sliding hatch that gives headroom to those who are descending or ascending, and access to the engine space is provided by hinged hatches.

For ventilation of the engine-room I have taken a leaf from the notebook of Sunray's designer, and have copied his steering wheel box ventilator. In addition to this I have provided air passages in back of the cockpit seats (as may be seen in the plans) so that there will be free and unrestricted circulation of air in the engine compartment. This important matter is ef-



Cross sections of Dawn at three different stations. Note the method of ventilating the engine compartment, shown in Section 6

fectively attended to in the other compartments by the use of large port-holes and hatches, which admit also abundant light, and the forward cabin is further supplied with a

age space for clothes and incidentals has been arranged for, and the galley is particularly fortunate in this regard.

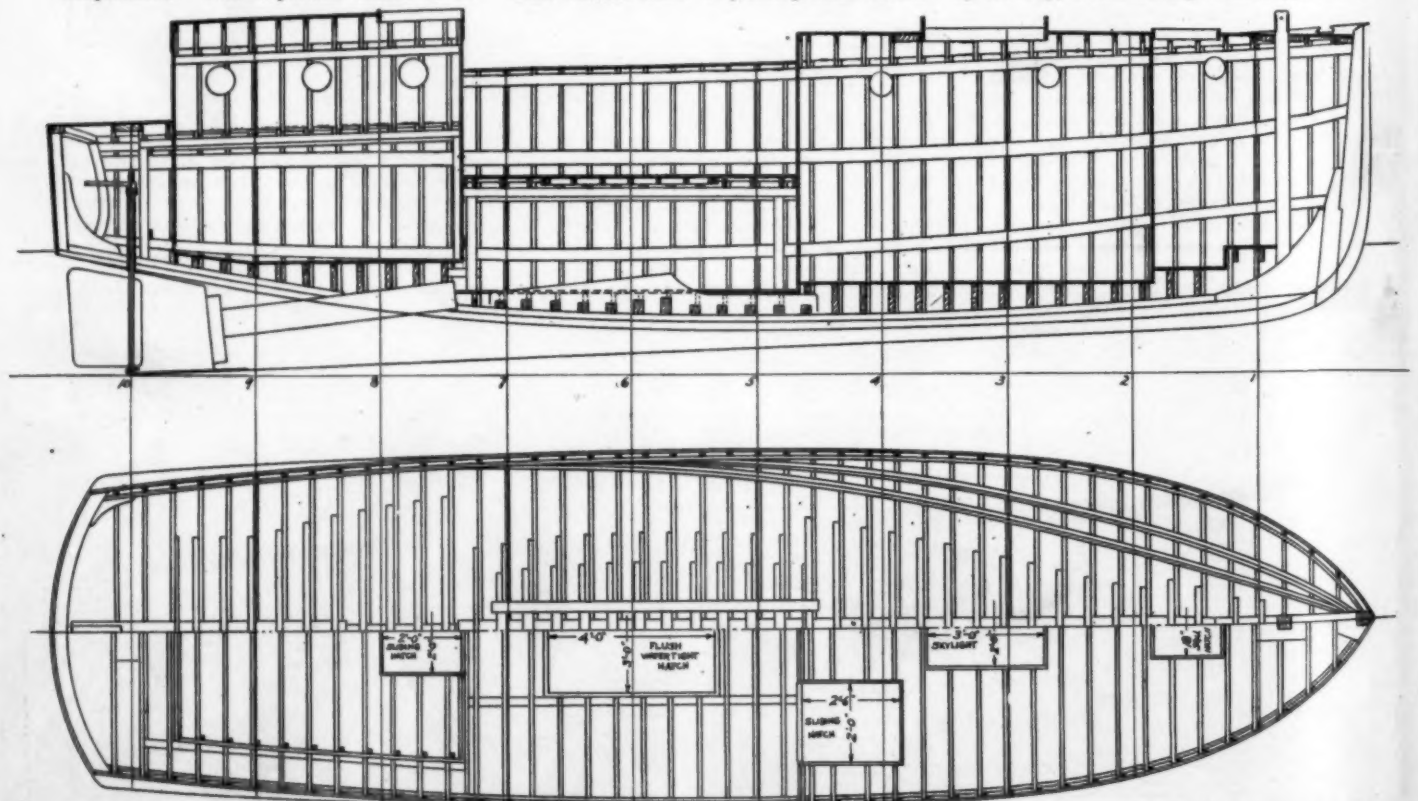
While the arrangement of a cruiser is al-

ways of interest, it is the material entering into her construction that is really important. In Dawn, I have specified lumber of the finest grade throughout, and of a thickness commensurate with the boat's length and the demands which will be made upon her by the exigencies of weather and continued service. Her frame is of white oak throughout, the keel member being 4 inches thick and if possible in one piece. The keelson is a 2x6-inch piece, and the ribs, which are spaced 8 inches on centers, are of 1x1 1/4-inch material. The deck beams are of 3/8-inch thickness by 2-inch depth and are to be cut or bent to the proper radii. The cockpit floor beams are of 3/8x3-inch material and are laid with a 1 1/2-inch crown. (The cockpit, or bridge deck, by the way, is self-bailing with scuppers that

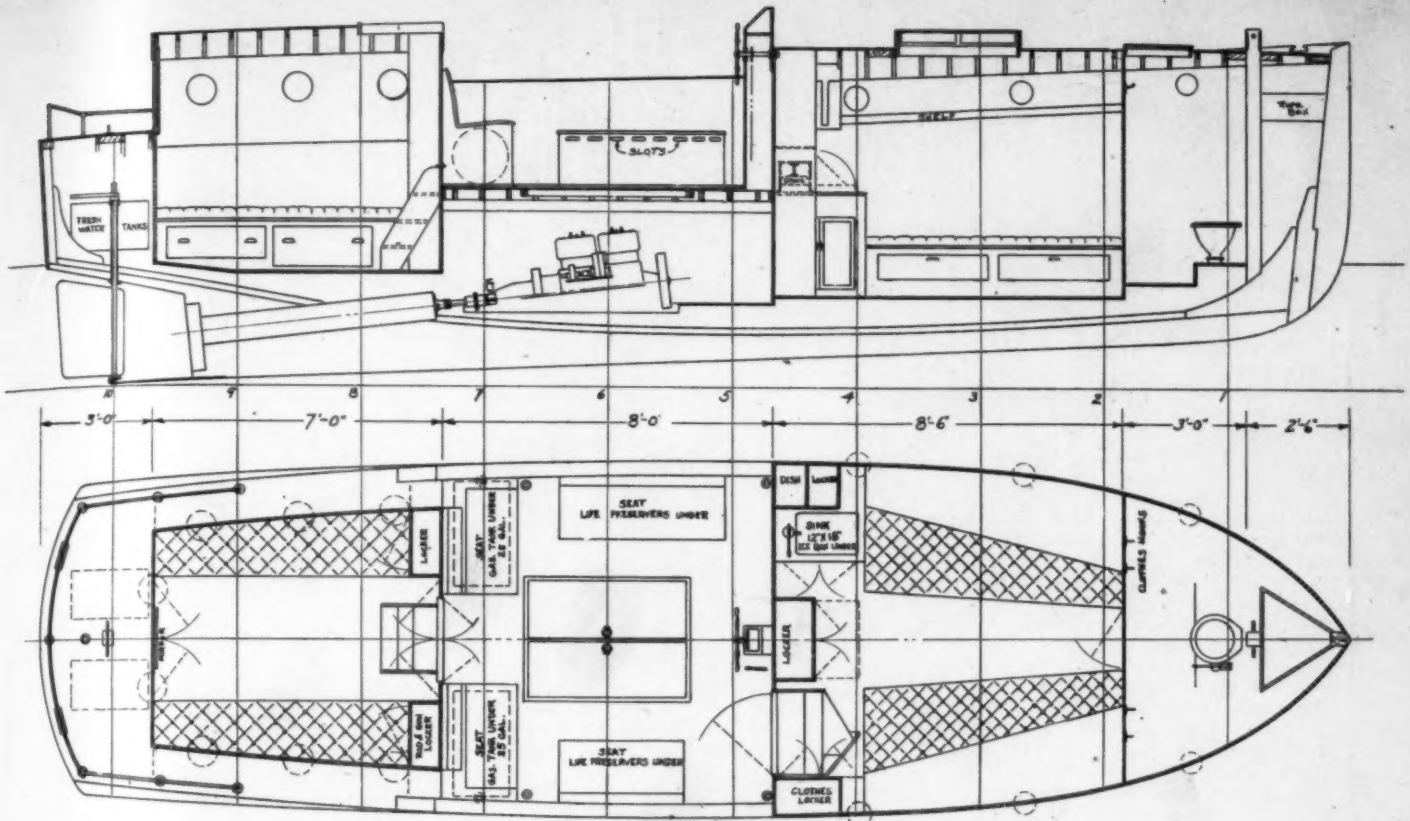
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skylight, which when open gives full headroom. The after cabin is fitted with two berths which may later be replaced by others of the extension variety, and drawer space is provided beneath them. A pleasing detail of this

2-inch depth and are to be cut or bent to the proper radii. The cockpit floor beams are of 3/8x3-inch material and are laid with a 1 1/2-inch crown. (The cockpit, or bridge deck, by the way, is self-bailing with scuppers that



Construction plans of Dawn reproduced to a scale of 1/4-inch to one foot. The hull is of white oak throughout, and the ribs are spaced eight inches on centers



Inboard profile and arrangement plan. It will be observed that there is hardly an inch of waste space in Dawn, and that the locker room is unusually large. The reproduction here is according to a scale of $\frac{1}{4}$ -inch to one foot

will actually scup.) The stern deck beams are identical in size with those of the forward deck, and the deck is to be given a 3-inch crown. The transom is constructed of two skins of $\frac{1}{2}$ -inch oak, and the planking is of $\frac{1}{4}$ -inch clear Southern cypress. The rubbing railings are of oak. All decks, including the cockpit, are to be covered in canvas, well laid in marine glue.

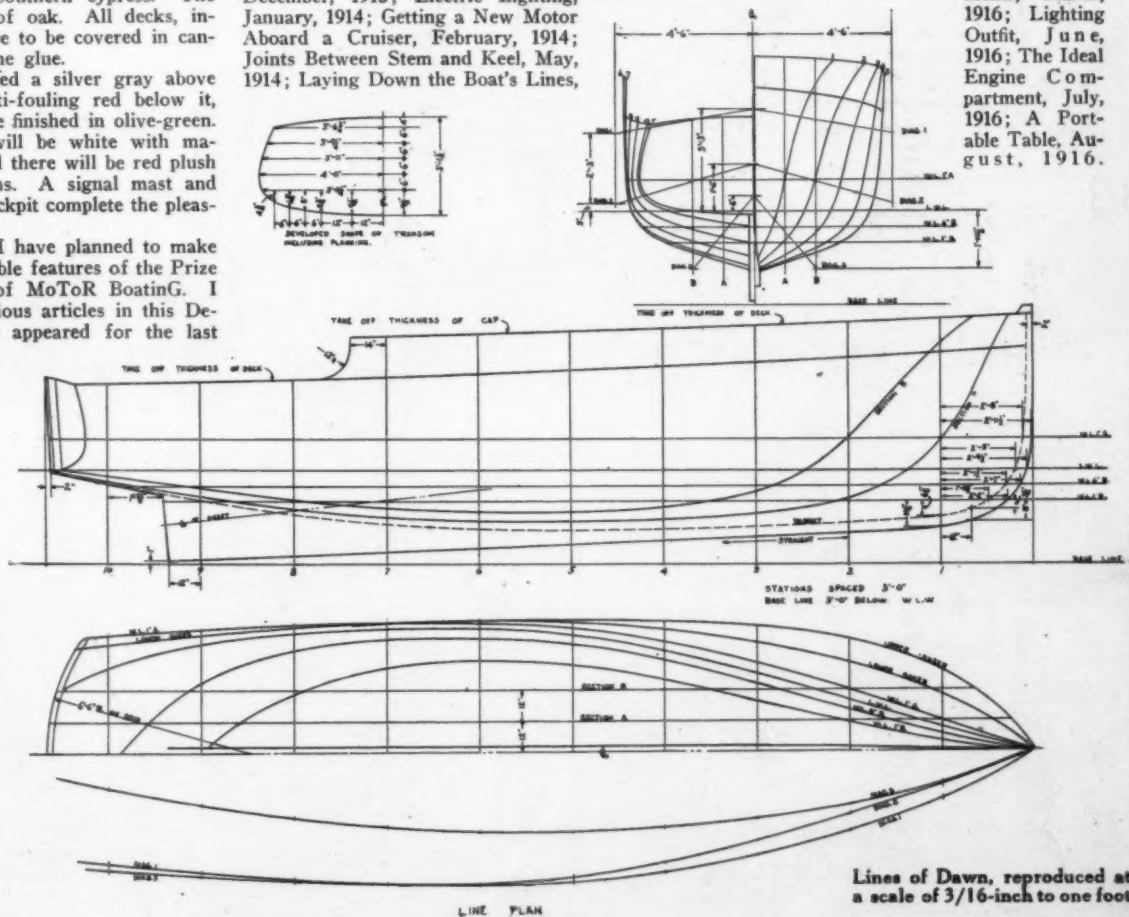
Dawn will be painted a silver gray above the waterline and anti-fouling red below it, while the decks will be finished in olive-green. The cabin interiors will be white with mahogany trimmings, and there will be red plush cushions on the berths. A signal mast and an awning over the cockpit complete the pleasing effect.

In building Dawn, I have planned to make use of the many valuable features of the Prize Contest Department of MoToR Boating. I have indexed the various articles in this Department which have appeared for the last several years, and some of the special items which are exceptionally valuable are listed below, together with the issues in which they appeared.

Building an Awning, December, 1911; How to Canvas a Deck, February, 1912; Making a Watertight Hatch, May, 1912; Wiring a Switchboard, June, 1912; Installing the Gasoline Tanks, October, 1912; Steering Gears, December, 1912; A Steam Box for Amateur Builders, January, 1913; Boring the Shaft Log, March, 1913;

Lining Up the Propeller Shaft, April, 1913; Fitting the Garboard Plank, May, 1913; Constructing the Engine Bed, July, 1913; Constructing a Watertight Cockpit, September, 1913; Fitting and Swinging the Port Light, December, 1913; Electric Lighting, January, 1914; Getting a New Motor Aboard a Cruiser, February, 1914; Joints Between Stem and Keel, May, 1914; Laying Down the Boat's Lines,

July, 1914; The Best Exhausts, August, 1914; Fastening the Frames and Floors, January, 1915; Fitting the Stuffing Box, June, 1915; Auxiliary Sails, July, 1915; Carrying an Extra Supply of Oil, October, 1915; Rudder Arrangements, March, 1916; Lighting Outfit, June, 1916; The Ideal Engine Compartment, July, 1916; A Portable Table, August, 1916.



Lines of Dawn, reproduced at a scale of $\frac{3}{16}$ -inch to one foot

Building a Flying Boat

The Construction of the Hydroaeroplane's Superstructure—Nomenclature of the Principal Parts—The First Steps in Learning to Pilot a Seaplane

By Cyrus Wilson

PART II

BEFORE proceeding with the construction of the flying boat's superstructure, or wing construction, a knowledge of the craft's principal parts will be of value. From the illustration of the Curtiss Model F flying boat, having its main parts lettered, location and use of the ailerons, pontoons, rudder, elevators, etc. are made simple.

Beginning with *A*, marking the elevators, which give vertical control, and continuing, *B* is the rudder giving left and right control; *C* and *D* the ailerons which give control for lateral balance; *E* and *K* the anti-skid surfaces which help prevent the machine from skidding sidewise; *F* the propeller, and *G* the motor; *H* is the horizontal stabilizer, a fixed surface which might be likened to a boat's skeg. *I* is the vertical stabilizer, *J* the hull, *L* the upper plane, *M* and *N* the front and rear wing struts respectively, and *O* the lower plane. *P* is one of the pontoons. These balance the machine while it is afloat and also prevent the wing tips from becoming submerged upon alighting. The front of the machine is usually called the nose and the rear the tail. The space between the planes is the wing gap.

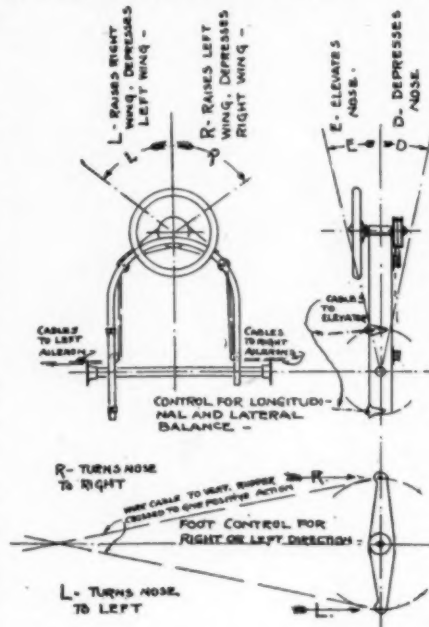
The plan of our own triplane shows the general layout of the hull, wings and tail, and, with the front view, gives practically all of the overall dimensions necessary for its building.

There are a lot of details such as fittings, fastenings, and bits of construction throughout a craft of this kind that of necessity must be omitted because of the limited space in a magazine article. All these, however, can be planned by the individual workman and, as suggestions are given in the plans, will without doubt be worked out successfully.

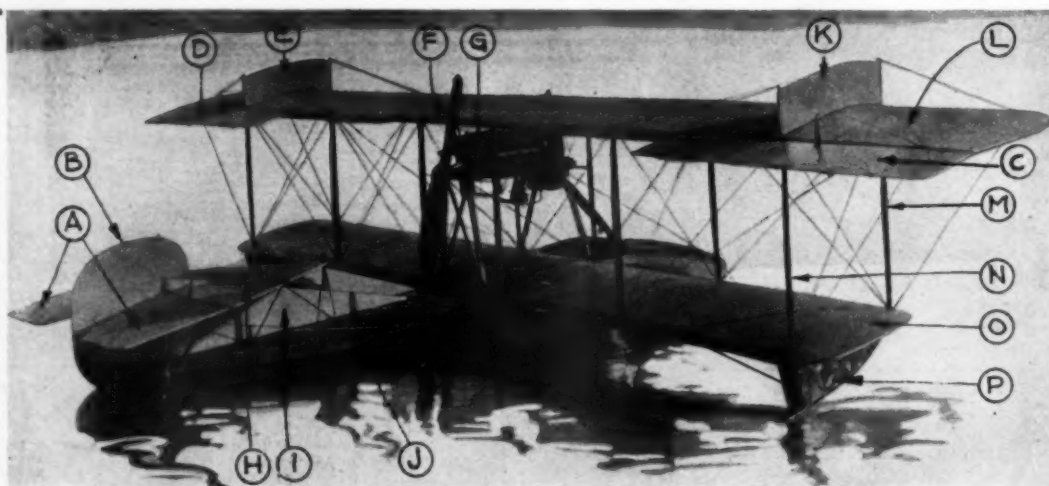
A drawing of the wing section, its construction and dimensions is shown. From this, perhaps better than a long description, one may see just how to execute the work. The most difficult part of the construction is encountered in fitting the half-hollowed forward cutting edge, especially at the wing tips, where it joins the $\frac{3}{8}$ -inch tubing that forms the wing end and the after edge. The one-quarter circular piece had best be cut from a hack-matack knee. The after edge of the wing curve is formed by $\frac{3}{8}$ -inch 20-gauge steel tubing, this extending from the front wing beam at the wing tips in a continuous length to the inner end of the construction.

In fitting the aquatite webs

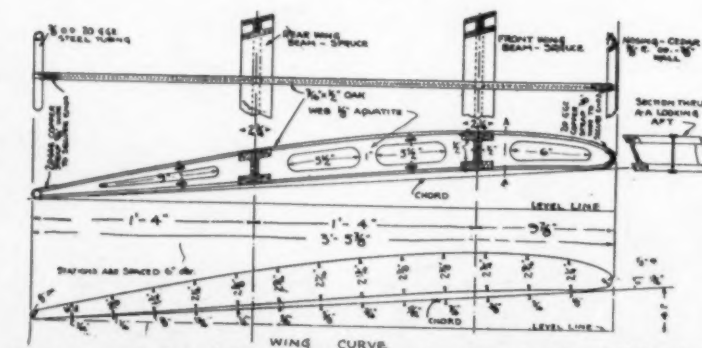
and the $\frac{3}{16}$ th x $\frac{1}{2}$ -inch oak ribs, fasten them with light wire nails and, also, glue every joint. All wood ends are doubly secured by



Details of the various controls



A Curtiss Model F flying boat, lettered to identify the principal parts. The explanation will be found in the accompanying text



Constructional plan of the wings, showing also the principle of lightening the web structure by the use of holes

a binding of 22-gauge copper, neatly fitted and well fastened.

The front and rear wing beams are the backbone of the wing panels and, needless to say, these, through being the main support of the wings, must be of perfectly straight-grained and absolutely clear spruce. A section of each is shown in the wing curve drawing. Notice that at the wing struts, at the ends and where the diagonal struts join them, the lightening channeling terminates, thus leaving a square through which these members are made fast.

In all of the flying boats built, in fact in practically all aeroplanes, the gap between the wing panels is maintained by separate forward and after wing struts. These are the vertical in-compression members of a truss formed by them and the strands of steel cable whose turnbuckles hold secure the strength of the entire wing construction, all this forming a mass of miscellaneous struts, wires, and fittings that add considerably to the dead resistance of the machine.

In this little machine four wing struts between each two planes (eight in all) supply ample strength. Each of these is a built-up unit of streamline section, as shown in the detailed sketch, and extends in a fore and aft direction from wing beam to wing beam, thus precluding the necessity for wire stays for maintaining the parallelism of one wing curve to the other. Then instead of employing diagonal wires from strut to strut, use $\frac{1}{8}$ -inch diameter light steel tubing, with a wooden stiffener the length of its after side

to create a streamline form. There is but one pair of these on each side between all three planes.

The tail of the machine consists of a vertical stabilizer and rudder, and a horizontal stabilizer and elevators. From the sketches one may learn much of their construction, which is similar to that of the wings and so

hardly requires special mention. The ailerons are also of the same construction. The pontoons are made of 20-gauge galvanized iron, each one fitted with three bulkheads approximately where shown. They are hung upon struts similar to those between the wings, but are of lighter construction, and are stayed each side with $\frac{3}{8}$ -inch light tubing. As the various parts are completed they should be treated to at least two coats of spar varnish and set away preparatory to the final assembly.

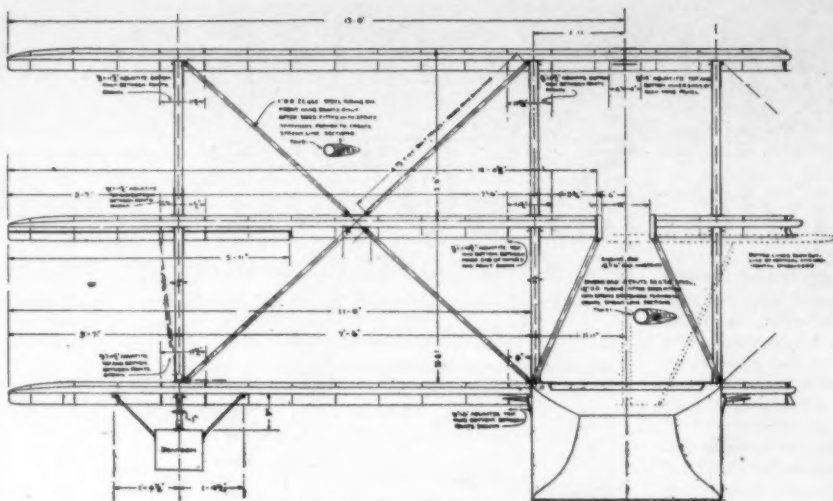
The complete machine should

be assembled, even to the control wires, pulleys, guides, levers, etc., before any wing cloth is applied. Great care must be used in this, as every part must be fitted accurately and in such manner as to be removable. Bear in mind always that each wing panel, the struts, the stabilizers, etc., must be removed in event of the machine's being shipped away or stored during the winter months and so fashion the fittings that secure these with that end in view.

Unbleached linen is usually used for wing covering. The cloths are sewn together just as those of a sail are, the width of the cloths being each about one yard wide. The material is stretched diagonally across the framework and held in place by small copper shade tacks, and also sewn along the edges of the wings, rudder, ailerons, and elevators.

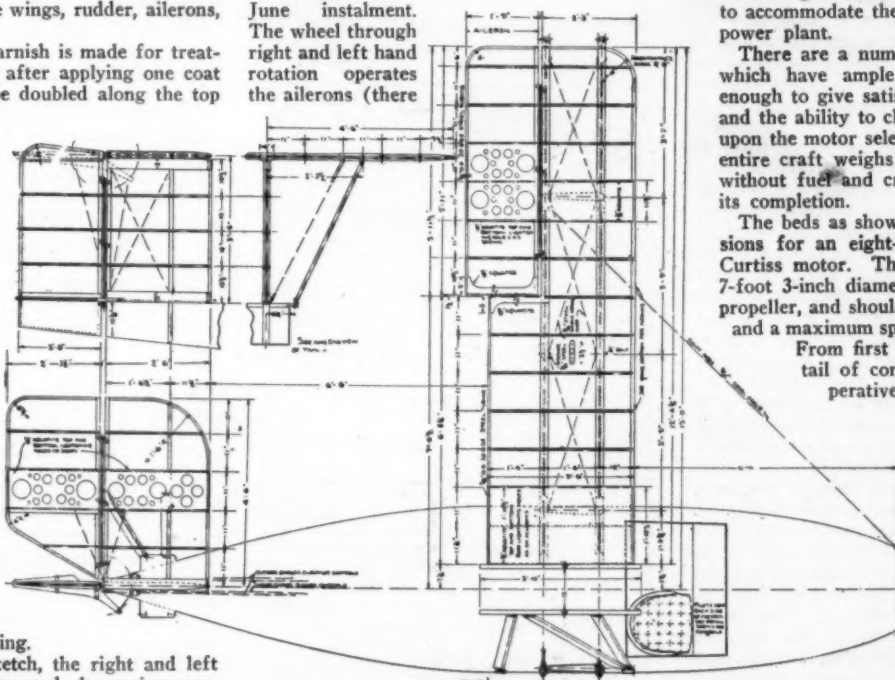
Special "dope" or varnish is made for treating the covering, and after applying one coat the covering should be doubled along the top and bottom of each rib and along the cutting and after edges of the three planes, the ailerons, stabilizers, rudder, and elevators, thus covering the tack heads. These doublings are held in place by the "dope", it being used similar to glue for this purpose. In addition to preserving the wing surfaces, this preparation shrinks the linen, and draws it as tight as a drum-head. The struts (wing, engine, diagonal and tail) should be wrapped with wing cloth and treated the same as the rest of the covering.

As shown in the sketch, the right and left steering gear, elevating and depressing control and the aileron control is not a complicated affair. Right and left direction is attained by the vertical rudder operated through a foot actuated yoke. Vertical direction is had by the elevators, these being controlled by the bowed wheel mounting which



Front elevation of one-half the superstructure

is hinged to allow motion fore and aft, thus transmitting movement to the elevator yokes, as shown in the side view of the machine that was shown in the June instalment. The wheel through right and left hand rotation operates the ailerons (there



Plan view of the wings and elevators

being two wires to each one), for all the world like the steering gear on a boat, excepting that the cables are so rove that upon revolving the wheel the right-hand aileron

"good enough" that cause breakdowns and accidents, and accidents aboard aircraft are prone to be fatal. So let me impress again upon those who build this craft the absolute necessary of thought and unending care that every part is of Al material, and fastened in such manner that by no chance can it let go. There are so many little things always cropping up during the building of any kind of a boat that I shall be glad to give my personal attention to any question that may arise during this craft's construction and to advise as to how they may be best overcome. So, reader, speak out if there be any special information needed.

Having completed and equipped the machine, the next subject of interest is to learn to fly it. Like everything else in this world really worth while, flying

lifts while the left-hand one is depressed, and vice versa.

The general arrangement of the control column is given without dimensions, for its exact location from the pilot's seat, its height, etc., depend somewhat upon the reach of the pilot's arms and legs. All control cables must be of the finest pliable steel wire 3/16 inch in diameter. The pulley blocks should have sheaves of at least 2-inch diameter, and all wire ends must be spliced wherever an attachment is made to either anchor terminals or turnbuckles. Aeronautical fittings and hardware for aircraft

of every description may be purchased from a concern in Philadelphia which makes a specialty of these things.

The engine beds, of course, must be made to accommodate the motor selected for the power plant.

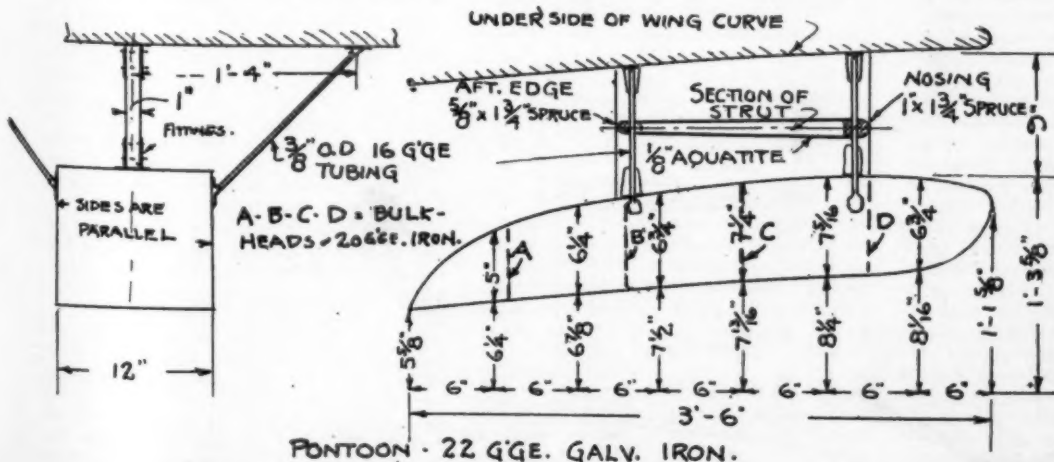
There are a number now on the market which have ample power and are light enough to give satisfactory service. Speed and the ability to climb will depend largely upon the motor selected, and so long as the entire craft weighs less than 1,500 pounds without fuel and crew, success will crown its completion.

The beds as shown are of proper dimensions for an eight-cylinder 90 h.p. O. X. Curtiss motor. This machine will turn a 7-foot 3-inch diameter by 4-foot 7-inch pitch propeller, and should give a minimum of 45 and a maximum speed of 70 miles an hour.

From first to last watch every detail of construction. If it is imperative to use the best of materials in boat building, it is doubly true that the super-best must be used in building aircraft. Do not take a chance with any part of the construction and let something go as being "good enough."

Every detail must be carefully thought out and more carefully executed. It is the things done

being two wires to each one), for all the world like the steering gear on a boat, excepting that the cables are so rove that upon revolving the wheel the right-hand aileron



Dimensions of the pontoons, and method of joining them to the wing structure

requires real thought and long practice before one may hope to become proficient. Piloting air craft is an art and, although better learned under the tutelage of a competent instructor, may be mastered first hand. After all, this is the method by which the earlier birdmen found their way aloft; and, as one in building a machine becomes perfectly acquainted with each control and as its functioning is already familiar, there is no reason why the thing cannot be done again.

First off, it is a wise policy to assume the pilot's seat, securing oneself in the seat by means of a stout safety strap, which, by the way, should always be worn, and with the craft afloat, but made fast to a convenient mooring, start the motor and become accustomed to its rhythm and control, while at the same time, moving the steering yoke and other controls so as to become perfectly familiar with their "feel."

After making sure that all the controls and also the motor are in perfect order, cast off from the moorings and proceed as a boat, slowly, and only upon days when there is no wind. Stick to the water, for only in this way may the movements of the steering gear, the elevator controls and the aileron action be learned.

Make a practice of moving the controls very, very slowly, and never jerk them. Always remember in whatever emergency to move deliberately and gradually. The reason for this is that large and sudden movements of the control surfaces retard the craft's speed and also create undue strain that usually raises havoc with the machine.

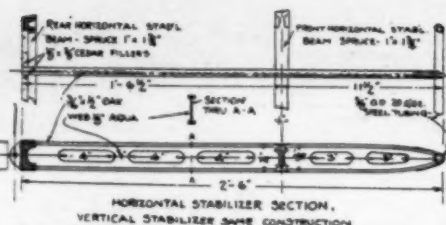
Try straight away runs first, then learn to turn, and as time brings greater confidence drive the craft a little faster until its operation becomes perfectly familiar. Preliminary exercises of this kind are invaluable and the time expended is well spent, for to attempt a real flight without them would be an act of folly.

It is a mistaken idea that flying craft must be operated at extreme heights. It is true that for the experienced airman it is safer to travel high, but not so for the beginner—especially when there is plenty of room to leave the ground or to alight again.

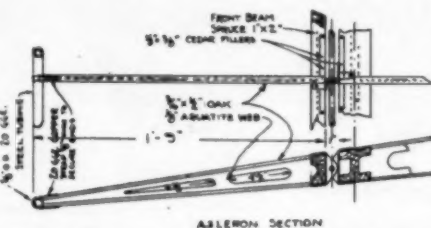
One of the instructions given by experienced aviators to pupils in the days when aeroplanes were equal only to carrying one person, was that the machine be kept at least six feet from the ground and never more than thirty, and this is good advice to adhere to to-day. One of the reasons for not flying higher than thirty feet is that the air becomes thinner, more rarified, as the altitude increases, thus offering less sustaining power. Also, while sailing near the ground or, in our case, the water, it is easier to alight, a nose or tail dive being hardly possible in so short a distance.

Skimming the water's surface closer than six feet is dangerous, as this is insufficient distance in which to recover one's self should the machine become but slightly off its course.

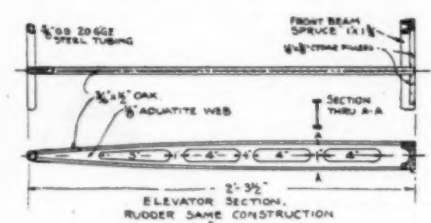
The next thing in order is an actual flight. As the motor is gradually opened up and the craft pushed ahead under the impulse of the propeller, it will gradually rise from the water. When the machine leaves the water, which fact one will know by the cessation of the sound of the water pattering on the bottom of the hull, push out slightly and gradually on the control column, which will depress the elevators, thus bringing the machine to a horizontal level and overcoming its tendency to rise. This is the time the pilot requires a cool head and must not become rattled. There is something in the sensation of being suspended in the air that is disconcerting, and even to men who have an iron nerve and great will power it is difficult for them to keep cool. This is, undoubtedly, due to the fact that a man flying is quite out of his natural element and it is necessary to complete a number of short flights in order to gain confidence. Don't attempt too much at once and remain content to soar away for several hundred yards at a time, remembering that a few short flights well made are better than a blundering hash of a half mile. Again let me caution the beginner to keep within the limits mentioned



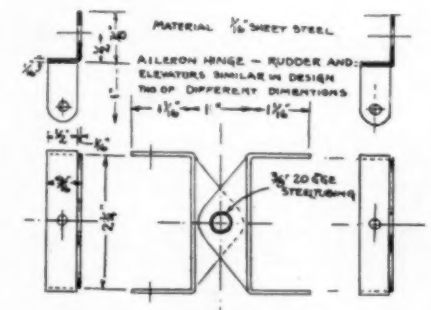
The horizontal stabilizer, which may be likened to a boat's skeg



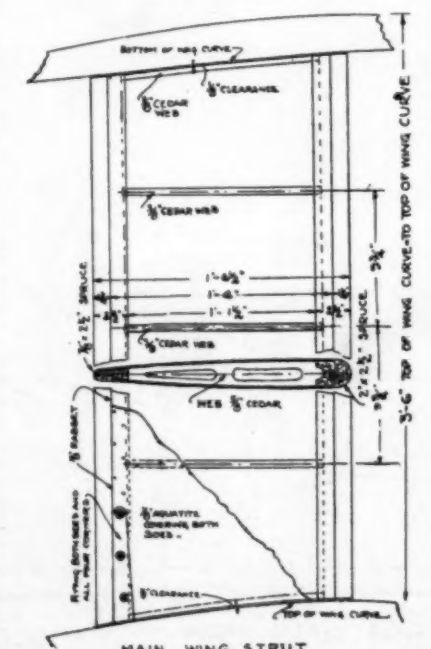
Detail of the hinges used to pivot ailerons, rudder and elevators



Section of the ailerons, which give control for lateral balance



Construction of the elevators and the rudder. The former gives vertical control



Side elevation of the wing structure

before, six to thirty feet. This is not given only to lessen the risk of a deep dive, but to contribute somewhat to the novice's confidence, just as swimming in shallow water dispels the fear that deep water holds in the mind of the embryo swimmer.

The most difficult thing to learn is to maintain lateral balance, and this knack of keeping the machine on an even keel is of the greatest importance. Lateral balance is maintained by means of the ailerons, movable surfaces at the wing tips. As the air is continually in motion, eddying and shifting, the machine is momentarily having its center of lift or buoyancy changed and its equilibrium constantly upset. Consequently the pilot must be ever vigilant in preventing his craft from rocking sideways, for if this angle of keel becomes too great the machine will slip, a condition from which recovery is most difficult. This is one of the things that require prompt and intelligent action, so bend every effort to keep the craft level.

It is a difficult thing to attempt a description of what to do in making a turn aloft, for it is only by endless practice that the intricacies of flight may be learned, and it takes time and patience to create a practised airman.

At the best flying schools and with a skilled instructor, 100 hours at least are necessary before a student is allowed to pilot a machine alone, so go slow and plan ahead just what you should do in every emergency. To be master of an aeroplane one should know how to perform every possible stunt, including looping the loop, upside down flying, tail sliding, etc., for it is only by mastering feats like these that an aviator is able to be master of the machine he flies and by practising beforehand all possible maneuvers he is ready for any emergency and is not surprised or numbed by situations that require every faculty to correct.

Let me impress once more the admonition "Pull gradually on the controls." No one of us is endowed with the power to look down the future and so learn its secrets. Even a few years ago the art of aviation was a small thing and although it has, within three years, forged ahead in leaps and bounds it is still but in the earliest stages of its development. We all know how wonderful has been the development of the motor boat and realize full well the important things craft of this kind are doing in the great world war, but the speed of advancement of the aeroplane and the flying boat to its present state has been more than marvelous in eleven short years from that memorable day when Wilbur Wright successfully flew his biplane bringing it back to its starting place and covering a distance of about 24 miles in somewhat over half an hour. Within the past three years thousands and thousands of air craft, most of them heavier than air machines, have been built, each proving superior in every way to its predecessor and a bit more wonderful.

Every indication points to a still more wonderful development of air craft and especially to the advancement of the flying boat and within the next few years, not more than five, these craft will be in common use, perhaps not to supplant the old and tried motor boat, or the ever present motor car, but, in a sporting way, as a plaything of the man who has never "yachted" and of many of those who have dropped yachting for the charm of the popular motor car; for if in the past the call of the sea has been strong, the lure of the air promises to be irresistible.

To the marine motor manufacturers that care to produce suitable motors and also boat builders who desire to step into a new industry without abandoning their present one the aeroplane or flying boat offer great prospects.

We have reached the aerial age, the long dreamt of flying machine is here, and its future offers a far wider field than even that of the automobile. This seems a bold statement, but, upon reflection, it was not so many years ago that the "horseless carriage" was a joke and its future smiled at. Think of it! Such is the flying machine—the one-time joke of the universe.

PRIZE CONTEST IN QUESTIONS AND ANSWERS

Don't Give Up the Ship!

The Answer to the Question, "Shall Motor Boating Activities Be Suspended for the Duration of the War?" an Emphatic No—Cruising and Racing an Invaluable Schooling for Reserve Service

THE PRIZE CONTEST—Answers to the First Question in the May Issue

The Motor Boat a Training School for the N. R. F.

(The Prize-Winning Answer)

WITH the advent of the great war England found herself in need of a large fleet of auxiliary boats to act as patrols, mine sweepers, submarine chasers, etc. The boats could be bought or built, but the crews, experienced in the handling of small boats, familiar with the coast line and waters round about England, had to be found, and these crews were more valuable and necessary than can be well imagined. Now where did England find them? Where will this country, possibly confronted with the same exigency, find the crews for its auxiliary fleet? The only available source of supply is in the professional or amateur fishermen, yachtsmen, etc., who prowl up and down our coast in fair weather and foul, who learn the secrets of navigation at first hand, and who form a hearty, vigorous and thoroughly reliable body of men.

We have read in MoToR Boating and many of us know of our own observation, how these amateur yachtsmen have flocked to the colors and enlisted in the coast defense branch of the service. We know, too, how anxious the Navy officials are to secure men for this service who are experienced in the handling of small boats—men who have their sea legs on, so to speak.

Now I contend that amateur cruising is an important and legitimate training school, and that to shut it down now would be the height of folly. Shall we close West Point Academy, and discontinue Annapolis on account of the war?

Another thing to consider—motor boating activities are a great incentive to motor boat building. The skill of our boat builders, the ingenuity of our designers has been fostered by the steady demand on the part of our amateur navigators. To stop this activity for an indefinite period would, it seems to me, discourage the further development of small boat building in this country, and thus in some future possible crisis leave us less well prepared than we are in the present emergency.

Remember, too, that the existence of a large body of motor boat enthusiasts entails an immense fleet of small boats available to the Government in times of necessity. We all know how willing motor boat owners, for the most part, have offered their vessels to the Navy, and we should realize that to discourage these men now might mean a smaller source of supply at some future time.

It has been said that in an emergency in this country a million men would spring to arms between sunrise and sunset, but Heaven help us if our coast defense will ever be dependent on a million men who have never steered a boat, springing to a fleet which does not exist.

One more thing—it seems to me that the amateur motor boatman in cruising around, will form an unofficial eye for our Government, and will quickly note and report the existence of any suspicious craft or submarine base. As a matter of fact, he is expected by the naval authorities to perform this service.

PHILIP W. BUR, Germantown, Pa.

Teaching the Young Idea

WITH a large proportion of our available motor boats donated, sold or rented to the Government for coast patrol service for the duration of the war, with their owners and friends enlisted in the Naval Reserve to man this mosquito fleet along our seacoasts (which service in the larger boats may entail duty in foreign waters), it would seem that nothing but the smaller class of boats is left available for cruising, with the exception of those of a few slacker owners.

Who are then to man, cruise and fish in these smaller boats? The older men and

to speak, along the fringes in good weather and bad, watching the discipline afloat and oftentimes ashore, possibly seeing maneuvers when they occur, sometimes accompanied by the elderly man to explain as best he can what it all means. Then the fun of studying it up and talking it all over when ashore later on! Of course, with the principal waterways guarding the entrance to all harbors mined and net protected, there will be the awe-inspiring subservience to naval command in following the rules and regulations of the Navy Department which will appeal to the youth who does not always know what buoys, discipline and the rules of the road mean when out for pleasure in a motor boat.

This is going to appeal to the boy and make him not only want to learn more of the game, so that when he is called upon and does get into the fight, he may be relied upon not as a theorist, but as a motor boatman whose blood runs red and thick in his veins. Further it will make him want to read history, study and aim to follow those immortals of the sea, Nelson (who achieved his first success as a pilot of small boats), John Paul Jones, Perry, Farragut, and Dewey.

EUGENE LENTILHON, Bay Shore, L. I.

"Keep the Flag Flying"

THIS should be the motto of the motor boating fraternity during these troubled times.

There is no doubt that local conditions and restrictions, military or otherwise, will tend to curtail such activities, and some ill-advised remarks by persons in authority who should have known better, will tend to further discourage many, but what is so true of business as to be almost axiomatic, applies with equal force to sports, and this is that all pursuits which are not of necessity diverted to war purposes should be kept as nearly normal as possible.

The troops at the front are given every possible opportunity to indulge in games of various sorts, as it has been found that the interest aroused by these competitions greatly relieves the nervous tension. Those who for some reason are obliged to remain at home, are also under a nervous strain, and are equally entitled to some change from the daily routine. Many find relaxation in some form of motor boating activity, and wherever there is no interference with military plans, should be permitted to have the opportunity to secure it in this manner.

Then, too, the development of engines and motor boat types is intimately related to the two great forms of the sport, cruising and racing, and to prevent a break in this development they should be encouraged even at this time. Stress should be laid upon the point, however, that these activities (this applies more particularly to the racing game), are purely for relaxation and sport, and that the donation of prizes which would make the prize and not the sport the chief incentive, is to be deprecated. This plan has found favor in other lines of sport and there is no reason why it should not prove successful in motor boating events as well.

Perhaps the greatest benefits, if they be ac-

Questions for the September Issue

1. Taking into consideration experience gained in the past, discuss just what you intend doing immediately after hauling out your craft for the winter months.

Suggested by C. E. B., Fall River, Mass.

2. Describe and illustrate some simple device which you have found practicable for cleaning the water inlet to your motor, which has become clogged, without hauling out.

Suggested by H. A. J., New York City

3. Illustrate and describe the installation of a small dynamo for charging a storage battery on a boat, showing method of belting or gearing it to the motor, wiring, etc.

Suggested by H. H. P., Oakland, Cal.

Rules for the Contest

Answer to the questions, addressed to the Editor of MoToR Boating, 119 West 40th St., New York, must be (a) in our hands on or before July 20, (b) about 500 words long, (c) written on one side of the paper only, (d) accompanied by the sender's name and address. (The name will be withheld and initials or a pseudonym used if this is desired.) Questions for the next contest should reach us on or before the 20th of July. The Editor reserves the right to make such changes and corrections in the accepted answers as he may deem necessary.

The prizes are: For each of the best answers to the questions above, any article advertised in the current issue of MoToR Boating, of which the advertised price does not exceed \$25, or a credit of \$25 on any article advertised in the current issue of MoToR Boating which sells for more than that amount. (There are three prizes—one for each question—and a contestant need send in an answer to but one if he does not care to answer all three.)

For each of the questions selected for use in the next contest, any article advertised in this issue of MoToR Boating, of which the advertised price does not exceed \$5, or a credit of \$5 on any article advertised in this issue of MoToR Boating which sells for more than that amount.

youngsters—the former not available for service because they are beyond the age limit or physically unfit, and the latter who have not yet reached the age which makes them available to the reserve.

By all means encourage and insist upon the activity and continuance of the motor boat afloat, so that the future may see some of our growing generation eligible in time to become masters, pilots, mechanicians, telegraphers, etc. Thus we may foster a spirit born of independence and the freedom of the sea, and give rise to men of sea brains and daring coupled with the knowledge of experience from boyhood.

With the large fleet of motor boats on our coasts in active defensive, and possibly offensive service, it will be an inspiration to our young boys, so full of ambition, to skirt, so

When you send in your answers you must state what you will take for a prize should you win one

PRIZE CONTEST

cepted, are educational. If the boat owner will take his cruising a bit seriously and spend a little time practising the various points to be learned in the art of pilot water navigation, he will gain knowledge that will not only prove of service, should he be called upon to enter some form of Government service in the marine branches, but also be of great use when the present crisis is past. The value of actually knowing how to locate your boat accurately by a line of soundings or by bearings, or how to do the many other things that go to make a good pilot, and above all, to obtain the confidence that only practice can bring, cannot be overestimated.

In times of peace the average boat owner will look these things over in the book, and because application without compulsion or deep interest is not easy, let it go at that, only to find that when it becomes necessary to use some method he cannot do it or, having tried, lacks confidence in the result. A time like this provides the stimulus for a lively interest and is therefore particularly favorable for approaching the subject.

As those who already have this knowledge will, in the great majority of cases, already have entered the reserve, a continuation of these activities cannot but have the beneficial effect of increasing the number of those who have this specialized knowledge; hence from whichever point of view we look at it, the weight of argument seems to be in favor of a continuation of boating activities along rational lines.

ALOYS BRAMBACH, Scarsdale, N. Y.

Submarine Danger Negligible

SHOULD motor boating activities be carried on as usual during the war? Most certainly they should. The work of training men to intelligently handle the motor boat as it is being carried out by the United States Power Squadrons without any obligations to join, and your "Uncle Sammys" need of experienced men for the coast patrol should give the sport an impetus that it has never known before.

There is no sport more healthful or enjoyable, and since we must all be prepared for duty in some branch of the service, why not combine preparedness and pleasure and when the time comes let our experience count? The Universal Service Bill is passed. You must choose between the Army and the Navy. In the Army you carry practically your whole outfit on your back while marching, sleep any old place, and sometimes go without food, but in the Naval Coast Defense Reserve you are sure of a dry, warm, and comfortable place to sleep and eat, and you have no load to carry. As long as the boat is afloat your position is assured, and the whole crew is working for the safety of the unit.

No one thinks of laying up his automobile because of the war, and automobilists passing through certain territory are subjected to a very thorough inspection, so why let the war scare us from our boats? The submarine danger is negligible. Any boat capable of going where they may exist should be in the service of the Government, and the smaller boats would not be worth the cost of the torpedo could they be torpedoed. At any rate, they do not draw enough water, for the average depth at which a torpedo travels is from 6 to 9 feet. The waters navigated by the cruising boat are too close to shore for the submarine to linger long and use her deck guns. Should one be discerned the proper thing to do is to report the encounter immediately.

Take your cruise and run your boat as much as you can afford. Teach your friends and you are doing a service to your country and friends alike.

W. B. MOORES, Newburgh, N. Y.

Cruise Away

IN the midst of the hysteria attending the entrance of the United States into the great war, a good many well-meaning persons immediately set up the cry that every normal activity that even remotely savored of recreation must be brought to an instant halt. For several weeks no one challenged this peremptory demand. Several colleges lost no time in canceling their baseball, track and rowing schedules, momentarily losing sight of the fact that they were putting out of commission the mill which grinds the best grist for military purposes.

Fortunately, however, it was not long before saner counsel began to prevail. Cool heads here and there began audibly to avow their conviction that a program confined to eating, working, and sleeping, with no recreation, would only lead to inefficiency. The severe upholders of such a Spartan regime were reminded that athletic recreation was not mere idleness; that most of the time given to sports was not "wasted," and that, in reality, such activities could be made more purposeful than ever in inculcating discipline and initiative and in broadening a citizen's ability to serve his country. President Wilson himself, in a recent letter to the sporting editor of a New York paper, advocated a continuance of amateur sports.

If such a statement of the case be true as regards athletics in general, how much more forcible must it not be when applied specifically to motor boating, and particularly cruising?

As a matter of fact, no branch of sport has furnished more men for service with Uncle Sam than the yachting fraternity—and let me say in passing that this much-abused word has real force when applied to motor boat, and sailboat "bugs." Many of the more skillful skippers have accepted commissions, with emoluments which compensate them but poorly for abandoning their private business; hundreds of others, with some independent means, have enlisted as petty officers at salaries which entail a considerable sacrifice, and thousands of young "hands," without family responsibility, have flocked to the colors.

It will thus be seen that the "bugs" have made a by no means inconsiderable contribution to the nation's defense, and it seems to me that if yachting has been the means of developing so valuable a national asset, it is imperative, in times such as these, to carry the good work on.

Therefore, let every owner who, for one reason or another, has not been able to offer his services to the Government, do as much cruising as his time and means permit during the present season, taking with him such of his young friends as love the water. By doing so, he will not only perfect himself against the time when his knowledge and experience may be urgently needed, but will help out by teaching Young America the elements of motor boat handling.

C. H. S.,
Philadelphia, Pa.

Healthful Recreation Necessary

IN times of stress like the present, the need for healthful recreation is felt perhaps more than at any other time, and certainly there is no more healthful and invigorating recreation than a motor boat cruise.

A great many motor boats have been taken over by the Naval authorities for coast defense, submarine chasing, messenger and supply work and so on, but at best only a small proportion of all the cruising motor boats in the country can be used for such purposes. There are thousands of boats which are not suited or at best very poorly suited for any of the different classes of work the Government will

require, and there is no reason why these boats should not be kept going in private service.

The price of gasoline and a possible shortage may have a good deal to do with the use of motor boats for purely pleasure purposes, but as long as there is no actual scarcity, it would be unwise to keep boats out of service, although, of course, every effort should be made to prevent waste of fuel.

Pleasure cruising in certain districts around fortifications and points of strategic importance to the country should be avoided. Nothing should be done which might in any way impede or interfere with the defense of the country or necessary Government work. It is easy enough, however, for anyone planning a cruise to lay out a route which will avoid any possibility of interference with the work of the Navy. Inland lakes and rivers should come in for a great deal of attention, as they afford splendid facilities for cruising without hampering the national defense in any way.

The average man is learning something all the time and this is particularly true of the motor boatman. Experience gained in cruising will be of great value to him in case his services are later required in connection with the motor boat patrol or in some similar line of defense work.

There will, of course, be some inconveniences to put up with under present conditions. For one thing, the motor boatman will have to get along without wireless equipment. He should make also special efforts to obey all the navigation laws.

The average owner does not use his motor boat continuously, and those owners whose boats are not required for Government work should wherever possible share up with others who have turned over their craft to the Government.

E. M. C.,
Detroit, Mich.

No Cessation of Boating

AS a matter of fact, the cruise this summer is more in order than ever before, and should be of added interest because our country is at war. However, I believe that it should take on the character of a training trip, while if possible, every boat should have a navigator on board, and the crew should form a class for the study of navigation.

Many of the motor boat fraternity have already enlisted, but those who have not may condition themselves in no better way than by a two weeks' or two months' trip on their favorite river or lake, or better yet, along the coasts. Especially will the young fellows who have not reached the voting age benefit by this open air training, both in mind and body, as it is inconceivable that anyone could be on a boat for two weeks and not feel the better for it, and at the same time learn something of the necessary duties connected with the handling of boats. The boatman will also become familiar with the tides, wind, and weather, knowledge which is picked up without any appreciable effort on his part.

At all times cruising is an education to the boatman, although probably in the past chiefly from a geographical standpoint; but this summer the bays, rivers, and coasts are controlled by the man-of-war, and it will be a matter of necessity to become informed as to naval signals, rules and regulations, in order to avoid trouble, or possibly what is worse, ridicule. So it behooves the average river crew to take a "hunch" and secure for themselves some of this easily acquired knowledge, as it may be necessary for any one of them to tie a certain knot in the presence of some sophisticated old salt. In the event of a bungling job, the sailor is not at a loss for sarcastic remarks.

W. B. B.,
Philadelphia, Pa.

PRIZE CONTEST

The Dynamo Cut-Out

Construction of the Automatic Charging Switch Described by MoToR Boating's Readers—An Article of Electrical Equipment Indispensable to the Man Who Forgets to Switch Off

THE PRIZE CONTEST—Answers to the Second Question in the May Issue

Tested by Two Years' Usage

(The Prize-Winning Answer)

THE automatic generator cut-out is a magnetic switch for connecting a generator to a battery when the generator has reached charging speed, and disconnecting when the generator falls below charging speed. This action prevents the battery's discharging through the generator.

The operating coil, which encircles the core, is wound with two separate windings, i.e., shunt and series. When this coil is energized a movable piece of iron (the armature) mounting a contact, is attracted to a stationary piece (the core) also mounting a contact. The shunt winding of the coil is connected across the generator brushes (see connection diagram). The series winding is energized by the current flowing between the generator and the battery.

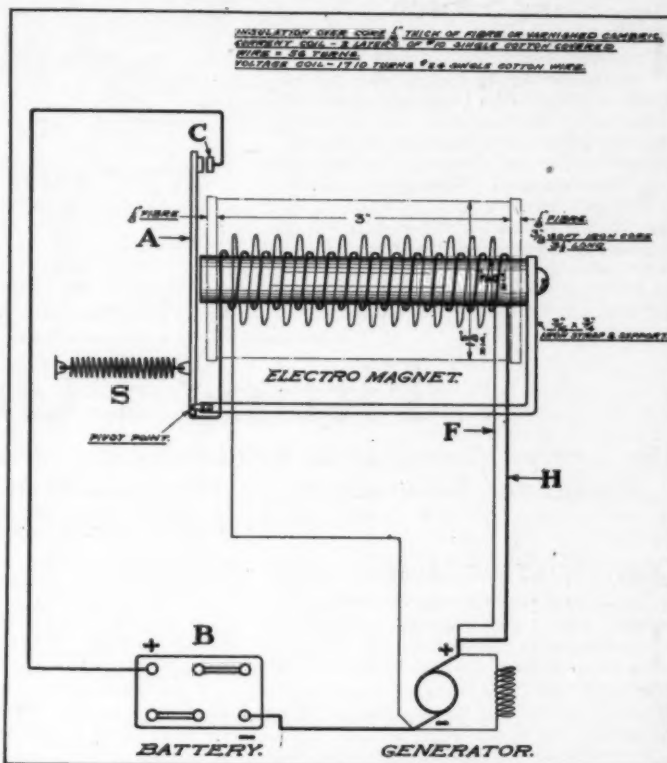
When the generator is started it builds up the voltage on the shunt winding until the switch closes. This closing voltage is of a value to cause a charging current to flow from the generator to the battery. The charging current flows through the series winding of the operating coil and adds to the magnetic pull of the shunt winding, as the windings are connected so as to be accumulative under charging conditions.

When the generator speed, and with it the charging current falls, the current will change direction, that is, from battery to generator. This reverses the flow in the series winding and likewise the magnetism. When this reverse magnetism neutralizes that of the shunt

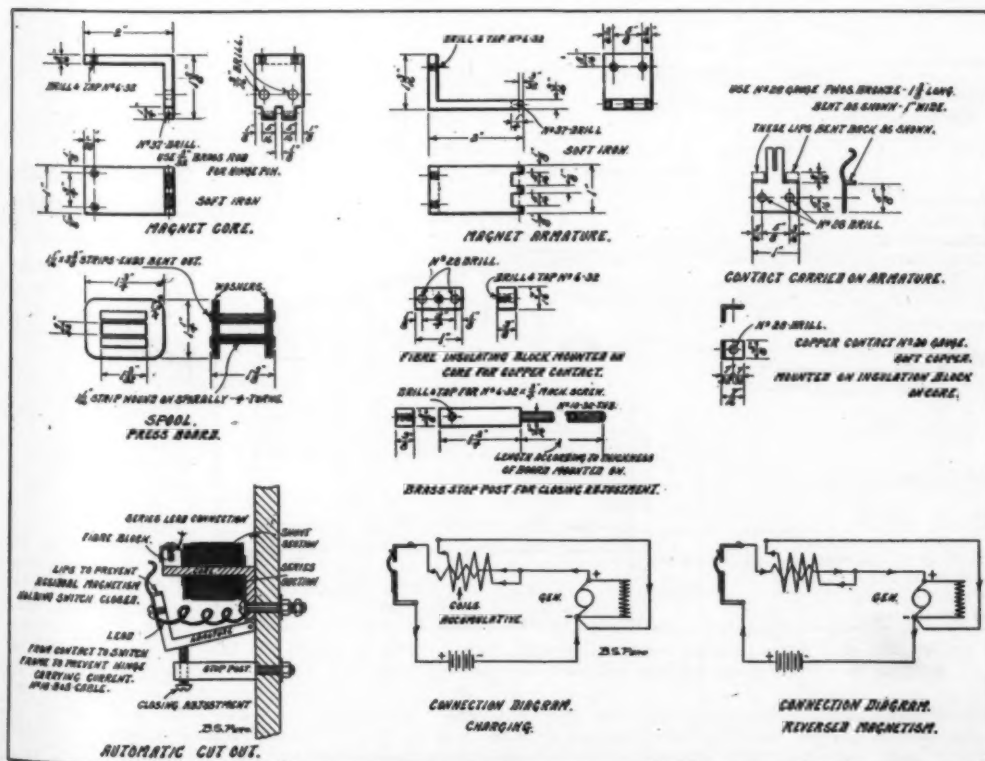
winding (the direction of the current in the shunt winding does not change) the switch opens, disconnecting the battery.

The illustrations show an automatic generator cut-out, designed and built by the writer, and used in charging a 6-60 battery at a charging rate of 5 amperes. The operating coil is wound on a spool made of press board or insulating paper. Make a wooden form for assembling the spool, shellac the latter and remove it from the form to dry.

The series winding (first to be wound) should contain forty turns of No. 16 B. & S. cotton wire, wound in two layers. Shellac this winding and cover with two layers of the paper



Charging switch offered by Mr. Lee. By reference to the text on page 28 the course of the current may be ascertained



Details of an automatic cut-out designed and put into successful operation by Mr. Pero

to insulate it from the shunt winding which is wound next. The shunt winding should comprise 400 turns of No. 30 B. & S. enameled wire, put on in the same direction of winding as the series coil. The leads from the shunt winding should be of No. 20 B. & S. flexible wire, soldered to the ends of the No. 30 wire.

Bind the coil lengthwise with linen tape, taking care the tape lies flat where it passes through the core space, and shellac this binding. Next assemble the switch, setting contacts so that they will be 3/32-inch apart, when the switch is open.

Connect the "out" lead of the series winding to a copper contact, mounted on the core. The "in" leads of the series and shunt windings are connected to a common terminal (to which the lead of the generator connects). The out lead of the shunt winding connects to the - of the generator. See the charging diagram for battery connections.

To find the polarity of the generator, immerse its leads in salt water. The lead giving off the greater number of bubbles is negative.

When the generator is up to speed the switch should close

PRIZE CONTEST

and remain closed until the generator speed falls, or the machine is stopped.

If the switch does not remain closed, but chatters, interchange the shunt winding leads.

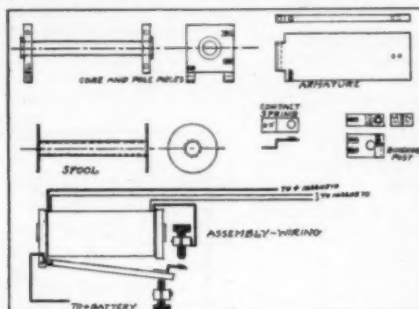
B. S. PERO,
Jersey City, N. J.

The Home-Made Charging Switch

THE purpose of the automatic cut-out, or charging switch, is to connect the generator to the storage battery when the generator is in operation (at proper speed) and to disconnect the generator from the battery when the generator slows down or stops.

The essential part of the automatic cut-out is an electromagnet. This magnet consists of an iron core within a spool of insulated wire. The winding should be in two parts—a current coil, consisting of a few turns of heavy wire, and a voltage coil, comprising many turns of fine wire, wound around the core in one direction, the ends of the voltage winding

being attached to the opposite poles of the generator. When the generator is run at or above some predetermined speed, current is generated and flows through the voltage winding on the magnet energizing the iron core, drawing the armature *A* against the contact point *C*, thus completing the circuit through the battery *B*.



Simple charging switch designed by H. H. B.

When the voltage of the generator is higher than the voltage of the battery, current will flow from the generator through the battery and through the winding *H*, giving an additional pull on the armature against the contact *C*. If, however, the voltage of the battery is higher than that of the generator, current will flow from the battery through the generator, also through the winding *H*. Since the winding *H* is wound in the same direction as the winding *F*, a current flowing through *H* in opposite direction to that flowing through *F* will demagnetize the core, allowing the armature *A* to pull away, thus opening the circuit at *C*. To avoid this operation the tension of the spring *S* must be such as to prevent the armature being pulled up before the generator has produced full voltage.

The data given will enable anyone to build a charging switch. However, the cost of building one switch will exceed the price of the standard manufactured article. Also, the manufactured article will be a better device, as it will have better details. On the other

(Continued on page 56)

Fitting a Gun Mount

The Correct Method of So Reinforcing the Deck of a Small Cruiser That It Will Stand the Weight and Recoil of a Rapid-Fire Gun—Even Distribution of the Load a Prime Essential

THE PRIZE CONTEST—Answers to the Third Question in the May Issue

Distribute the Load Evenly

(The Prize-Winning Answer)

THE mounting of a gun on a cruiser necessitates deck reinforcement sufficient to withstand the force imposed at the instant of gun fire. This force will vary with the caliber of the gun and the effectiveness of the recoil check or brake which absorbs a considerable portion of the recoil effort or powder energy. The remaining effort, known as the trunnion pressure, is imparted to and absorbed by the deck, but as the gun trunnions, at which the pressure is exerted, are above the deck level, then the actual deck stress is a multiple of the trunnion pressure and the height of the trunnion above the flooring. The trunnion pressure is a known quantity and is stated by the manufacturer of the gun.

The maximum deck stress occurs at the holding down bolts, which fasten the gun stand to the cruiser, and reference to the illustration shows effective cross beam construction, which distributes the stress evenly by having the beams intersect at each holding bolt.

Where there are four bolts in the gun stand, two of these bolts may be considered as taking a stress equivalent to one-half of the trunnion pressure multiplied by the height, divided by the distance that the holding down bolt is from the center of the gun base and keeping the reinforcing beam construction of sufficient sectional area so that the fiber stress

in the wood will not exceed two hundred pounds to the square inch.

The beams may well be of uniform size throughout their length and fastened at the frames with tongue and groove joint, but if the spacing of the frames does not correspond with the spacing of the holding bolts in the stand, it is well to secure the beam ends to the planking by short pieces or false frames by bolting.

The longer the beams are the more uniform

It is advisable to place under the gun stand a flat circular metal plate usually 3/16 to 1/4 of an inch in thickness, and under the deck at the holding down bolts large diameter washers with metal reinforcements tend to prevent the bolt holes from enlarging under the shock of recoil.

One precaution to be observed in the gun mounting is that of having the supporting base level or flat, so that when the holding bolts are tightened, no initial strain will occur in the deck, and another point of importance is to keep all holding bolt nuts fast, distributing the recoil energy uniformly over all.

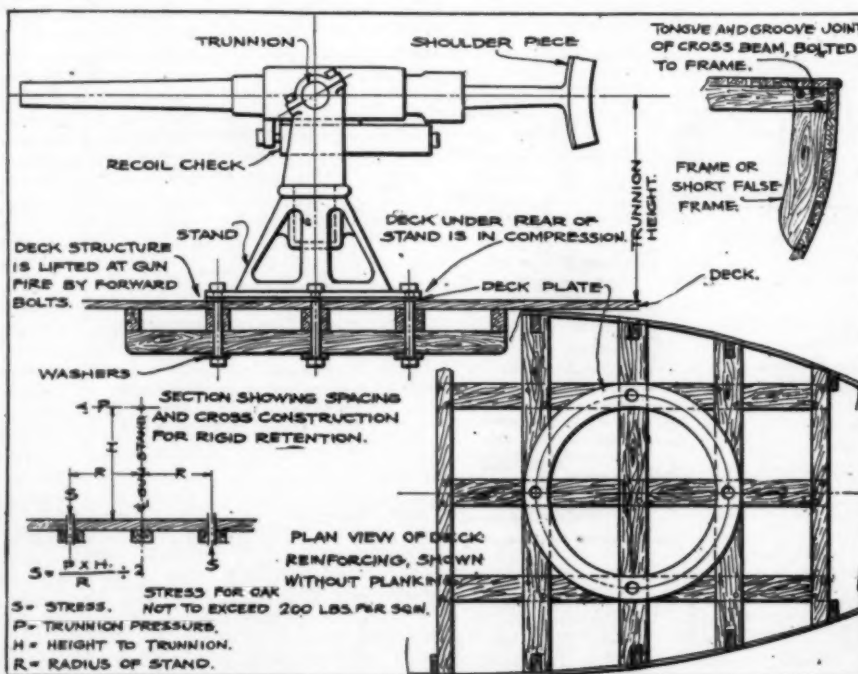
G. A. LUERS,
Washington, D. C.

A Removable Mounting

A PLACE on the deck should be selected for mounting the gun that is as free from hatches, skylights and other obstructions as possible. In this space a flat platform may be built of heavy oak planks as shown in the sketch. The dimensions and size of timber required will vary according to the size of the gun to be mounted, etc., but in a general way the length should be sufficient to reach across from four to

six carlines or beams. The width should be a foot or two more than actually needed for the base of the gun.

Owing to the crown of the deck it would be well to fit wooden filling pieces to the deck



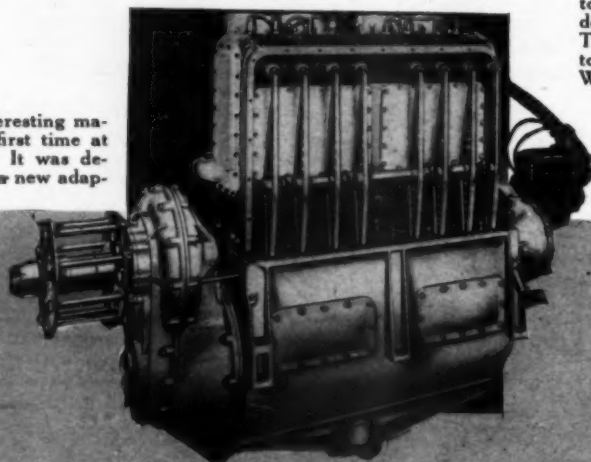
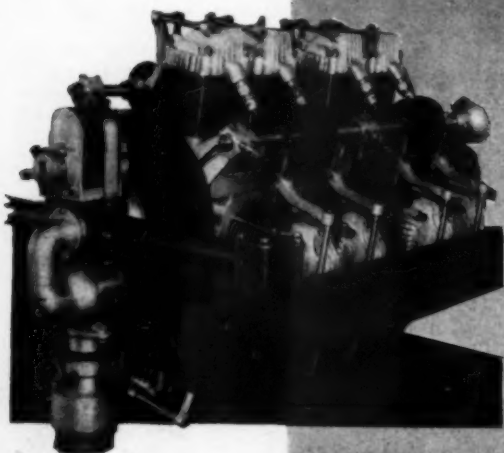
Plan view and section of a gun mounting suggested by Mr. Luers. It is essential that the support be level, and the holding bolt nuts be tightened uniformly

will be the load distribution over the deck, but as small cruiser construction does not permit of much extension, make all joints and intersections secure by fastening with bolts and screws.

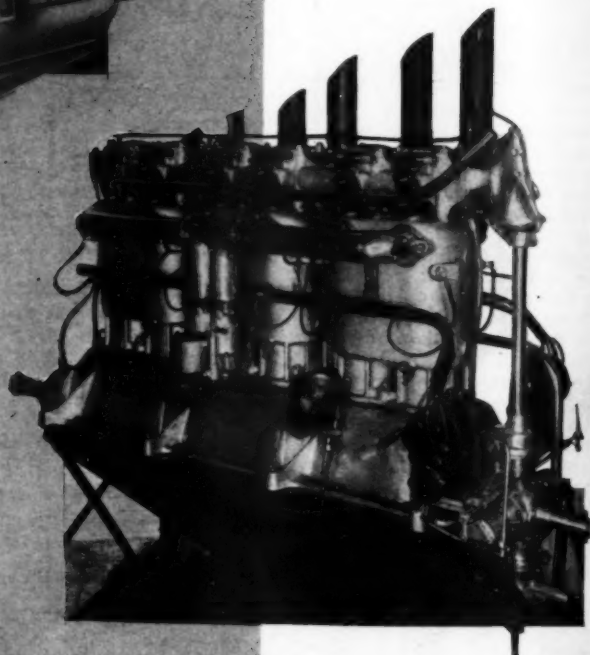
Foundation for a 1-pound rapid-fire gun devised by C. A. N.

American Aids to Air Fighting

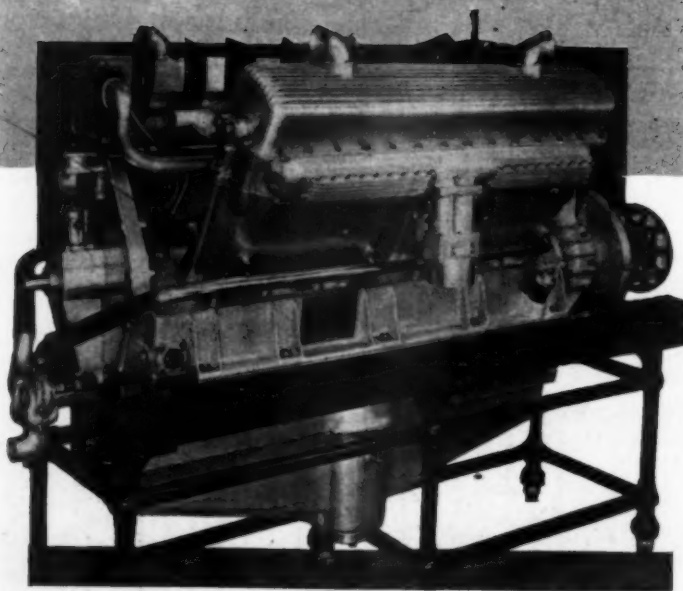
Below: The test model of an interesting machine which was shown for the first time at last winter's aeronautical show. It was designed by H. L. F. Trebert and is a new adaptation of the rotary type. It has sixteen cylinders arranged in banks of four around the crankshaft at 90-degree angles. Although measuring only 27 x 32 inches over all and weighing but 350 pounds, it is declared to develop 150 h.p.



The sixteen-valve Duesenberg aeroplane motor, like marine motors of the same make, is designed with horizontal valve construction. There are two inlet and two exhaust valves to each cylinder, and the inlets are in cages. With cylinder dimensions of $4\frac{3}{4}$ x 7 inches, the machine develops 125 h.p. at 2,100 r.p.m., the propeller being driven at 1,210 r.p.m. through a reduction gear. In the illustration the valve-actuating mechanism has been laid bare by the removal of the cover plate



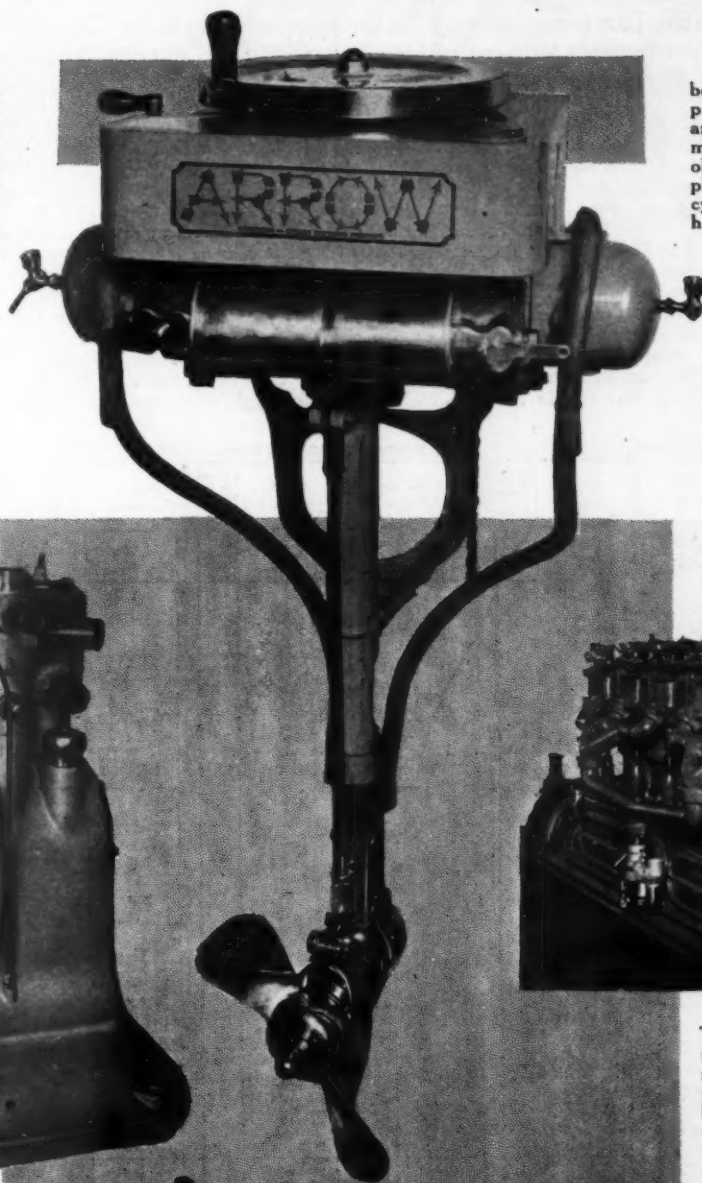
Above: The six-cylinder 140 h.p. Wisconsin aeronautical motor which operates at 1,400 r.p.m. and weighs 550 pounds. Its lubrication system is so designed as to be thoroughly effective when the aeroplane in which it is mounted is inclined at any angle for climbing or gliding. It is an overhead valve motor, with the valves set at an angle of 25 degrees. Two spark plugs, entering horizontally, are provided for each cylinder



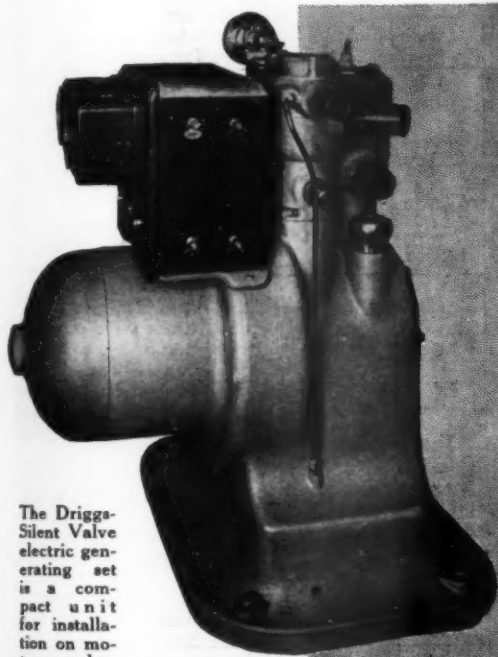
The Knox aeronautical motor is one of the largest which has so far been turned out in this country. It is rated at 300 h.p. at a speed of 1,600 r.p.m. Despite its power and size, however, the weight has been kept within reasonable limits by the extensive use of aluminum alloy. Two blocks of six cylinders are employed, set at an angle of 60 degrees, and the carbureters are attached to the outer sides of the blocks

Four Motors for Marine Service

The Arrow is a 4 h.p. rowboat motor manufactured by the Arrow Motor & Machine Co., of New York City. It is an opposed two-cylinder machine of up-to-date construction embodying many novel features. Most important, perhaps, is its tiltability. Because of the tilting device the

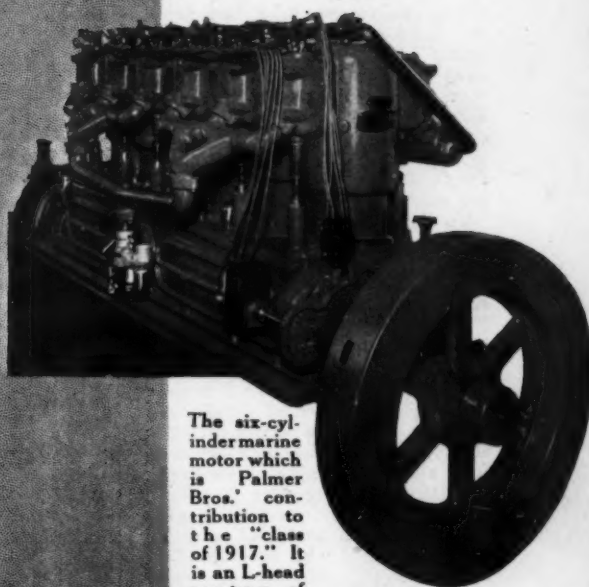


boatman need not fear that his propeller will sheer off in striking an obstruction, for the submerged mechanism will rise to clear the obstacle and swing back into place automatically. A one-cylinder engine, developing 1½ h.p., is also manufactured by this concern

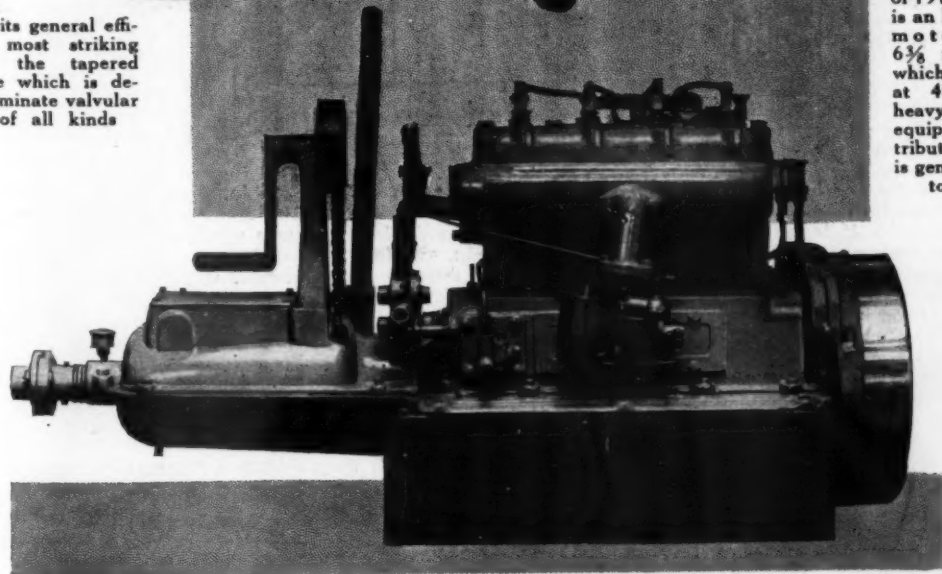


The Driggs-Silent Valve electric generating set is a compact unit for installation on motor yachts.

Aside from its general efficiency its most striking feature is the tapered rotary valve which is declared to eliminate valvular troubles of all kinds



The six-cylinder marine motor which is Palmer Bros.' contribution to the "class of 1917." It is an L-head motor of 6½ x 8-inch bore and stroke which develops its rated 50 h.p. at 400 r.p.m. Designed for heavy, unfailing service, it is equipped with magneto and distributor systems of ignition, and is generally a worthy contribution to the year's new motors



A flywheel cover constitutes one of the latest improvements to the well-known Universal four-cylinder 9-12 h.p. motor. Consisting of spun steel, nickel-plated, and fitting tightly over a special gear cover casting, its installation makes the Universal a completely enclosed motor

The Art of Semaphore Signaling

"First Aid" to the Motor Boatman Who Contemplates Learning This Rapid and Useful Method of Long Distance Communication—Logical Grouping of Letters the Shortest Road to Mastery

WHILE there are nearly a dozen systems of signaling in present use in the United States Navy, only three are perfectly adapted to use on small boats, and so the motor boatman need not burden his memory with the others unless he happens to be in line for a quartermaster's rating in the Reserve. These three are the blinker and the wigwag—both adaptations of the Morse International code—and the semaphore which is totally distinct from the dot-and-dash method. Although the beginner will find that the Morse code is grasped with comparative quickness, it will later be borne in upon him that he must practise it from day to day if any efficiency in sending or receiving would be retained. On the other hand, the semaphore, while elusive at first, at length becomes so firmly fixed in the mind that after weeks or even months of non-use of this system one's arms fall naturally into the correct positions for the various letters.

In committing the semaphore system to memory the beginner will naturally seek to master the easiest letters first and store these away for later reference. He will then resort to little tricks and dodges by which the more difficult characters may be definitely fixed in the scheme of things—and it is the purpose of this article to point out some of these short cuts.

To dispose first of the easiest letters, it will be observed that R, U, and N are formed by extending the flags symmetrically on either side of the body. Thus, to make R, hold the flags horizontally; U, have them halfway up, forming a rough letter U, and N, lower them to the exact opposite of the U position. Next in order of simplicity come the first seven letters of the alphabet—A to G, inclusive—which form a logical sequence of one-flag signals, commencing with A with the right hand and carrying up to D, directly over the head, which may be signaled with either hand. During these evolutions of the right arm, the left is held in the base position, directly in front of the sender, so that the flag is not visible to a person some distance removed. E is signaled with the left arm, as are also F and G, these characters being the opposites of C, B, and A, respectively. In these as in all other letters it is imperative that the positions be well defined and that the lower 45-degree angle does not slur into the horizontal position, the latter into the upper diagonal, nor this into the vertical position. This vertical position is one to which the naval instructors pay particular attention, and great care should be taken that the flag is not allowed to drop over or away from the head in the smallest degree.

The learner will do well to practise the first seven letters repeatedly, introducing also U, R, and N, until he can change from one to another without thought, and until it becomes automatic with him to form D with the arm which has been nearest to the vertical in making the previous letter—C to D with the right hand, E to D with the left, etc.

In the letters H and I will be found a new series, in which O can also be included. These three are formed with both flags on the right side of the body—H with the left arm held in the downward position and the right horizontal, I with the left arm unchanged but with the right brought to the upward angle, and O with the left arm horizontal and the right

up. However, it is not only permissible but imperative for the attainment of maximum speed that the positions of the two flags for each of these three positions be interchangeable. To illustrate, H may be formed by extending either the right or the left flag horizontally on the right side of the body, depending on the formation of the letter immediately preceding or following it. The governing idea is always to form the letters with a minimum movement of the arms, and this applies not only to D, and H, I, and O, but to the opposites of these last three—Z, X, and W, respectively. Z, X, and W may be included in the H-I-O series for the reason that they

advance the right arm to the upward diagonal to make T, and hold it there while the left is moved from the vertical to form U, which as was explained, is a balanced letter. In this entire series of letters it will be noted that the right arm is raised in orderly progression from the downward diagonal, and in forming V is finally brought to the vertical, the left arm being then in the downward position. Of course, this sequence or parts of it cannot obtain except by chance when one is spelling out messages, but it is a valuable aid when the letters are first being fixed in the memory.

W, X, and Z have already been mentioned as the opposites of O, H, and I, so the alphabet is now complete with the exception of Y. This character, by a slight stretch of the imagination, resembles the letter for which it stands, and may be remembered by keeping this similarity in mind.

To relieve the beginner of the difficulty of ferreting them out for himself the following groups of opposite letters has been prepared:

A—G	H—Z	K—V
B—F	I—X	P—J
C—E	O—W	Q—Y
		S—M

N and U are also considered opposites, but D, T, L, and R are without opposite letters, although the reverse positions of T and L stand for Letters and Signals, respectively. (When these two signs are made it is an indication that the signalman is about to resume spelled out messages if he has been signaling in code, or to send code signals if he has been spelling out words.)

As a further jog to the memory it may be well to consider the different flag positions as divided into two main groups—those which are formed on the right side of the sender and the others which are made to the left. The letters A, B, and C are manifestly in the first group, since they are formed with the right arm only, the left being held in the base position; and H, I, and O also classify themselves among the right-hand signals. In addition to these, however, it is logically possible to include K, P, Q, S, and T among the rights, for it will be observed that a line bisecting the angle in each of these positions bears toward the right of the sender.

The above grouping of opposites has been made with this classification in mind, and it will be observed that the first letter in each instance is a right-hand signal according to this definition, and the second a left.

The necessity for some such distinction between right-hand and left-hand signals will become apparent when the beginner undertakes to receive his first message. Send the word "get" to the novice, and the chances are about even that unless he is sure of his rights and lefts he will receive it "act." The characters for S and M are particularly confusing, and unless some means of differentiating between them is adopted at once, they will always prove stumbling blocks. Students of the semaphore who are already familiar with wigwagging may be aided in this respect by recalling that S is also a right-hand signal in that system (three dots) and that M is a left-hand signal (two dashes).

Having, by the means of these or similar devices so thoroughly mastered the code that each letter becomes a distinct entity, the learner can attain to perfection by one method only—practice.

THE SEMAPHORE SYSTEM.

Character	HAND FLAGS	Secondary Meanings	Character	HAND FLAGS	Secondary Meanings	Character	HAND FLAGS	Secondary Meanings	Character	HAND FLAGS	Secondary Meanings	Character	HAND FLAGS	Secondary Meanings
A		Error	I			Q		Ac-knowledge	X					
B			J			R			Y					
C		Repeat	K		Nega-tive	S		Z						
D			L			Pre-pa-ratory	T							
E			M		Amend-ing	U		Correct						
F		N				V								
G			O		Inter-ro-gatory	W		Signal (follow)						
H		Es-cate	P			Affirmative				Interval				

In seven letters of the semaphore system, variation from the above positions is permissible for rapid sending. These letters, as explained in the text, are D, H, I, O, W, X, and Z

also are formed by displaying both flags on the same side of the body, but it should be appreciated that they are formed on the left of the sender instead of his right. In further reference to the formation of these "double" letters, it may be said that in the Navy it is now the usual thing to make them with the arm which is extended across the body uppermost.

J is an odd letter, belonging in no series and quite likely to be confused with its opposite, P. It bears, however, some resemblance to the capital letter J and may perhaps be remembered through this similarity.

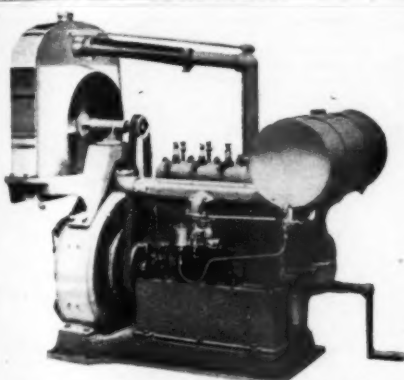
Arriving at K, it is plain sailing all the way down the alphabet to the opposite of this letter, V. First we have K, L, M, and N, formed with the right hand stationary in the downward position, and the left describing an interrupted arc down from the vertical. Next comes O, which, as explained above, is one of the seven letters in which the positions of the arms may be interchanged. Starting with this letter, then, and holding the right instead of the left arm horizontal, the latter is next moved up to the vertical position for P, and then lowered on the left side of the body in successive steps to make Q, R, and S. Now

New Things For

MOTOR BOATMEN

[Each month many new parts, attachments and fittings, interesting and invaluable to owners of large and small motor boats, are added to the devices already on the market. Announcements of these articles come to us in such numbers that in order to introduce all of them to our readers we have been obliged to omit descriptions and publish only illustrations with short explanatory captions. In doing this, however, we urgent-

ly invite our readers to write us for complete information, as we shall take the greatest pleasure in providing it, together with the manufacturers' names and addresses. Do not hesitate to ask us, as we have made special arrangements to take care of this branch of our correspondence and are able to give you accurate information with the greatest promptness.—Editor.]



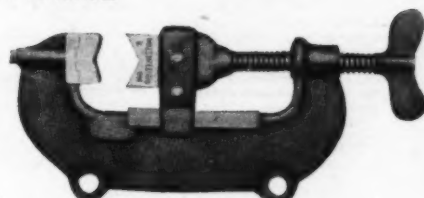
Latest assembly of the Universal generating set with every accessory to make the plant self-contained



An attractive yachting cap made in white duck of the style of the N.Y.V.C.



A universal joint which is declared to give maximum endurance and a minimum amount of friction



A pipe vise of light weight having great strength and efficiency

Wedge-shaped cushion suggested for use on a modern runabout



The Lesgass device is stated to possess superior merit as a fuel saver



Left: The Say-brook carbon brush, which can be used for many purposes, particularly for removing carbon deposits



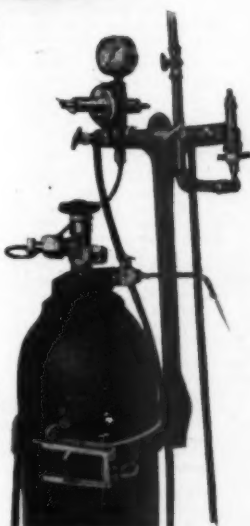
A back rest which, due to its concave construction is declared to give perfect riding in a luxury



A new plug of extra heavy construction having electrodes which will not burn down



Right: A new pocket screwdriver having three blades and a reamer which sells for 80 cents



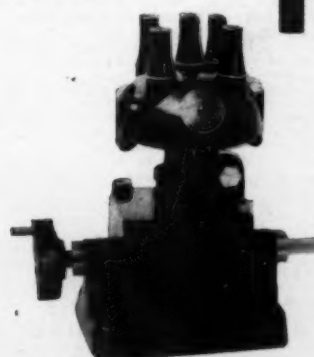
Oxy-illuminating low pressure gas apparatus designed for lead burning purposes. It has many uses in a general machine shop



The Spenco, a device fitted to a spark plug of a motor which is declared to reduce fuel consumption and keep the cylinders clean by completely firing the explosive charge



A novel mosquito screen which might prove useful in malarial districts. The pipe isn't altogether necessary



A battery ignition unit of the closed-circuit type which may be mounted in place of a standard magneto

Do not fail to write to the editor if you desire information concerning any of the above new things

Changes in Aids to Navigation

DURING the war it is but natural that a great many changes in the Government Aids to Navigation, buoys, lights, etc., will be necessary. Obviously many will be made which cannot be announced publicly. For this reason the motor boatman should not place too much dependence upon finding buoys in their proper location in the more important channels and harbors.

The use of buoys in navigating and piloting, therefore, will be uncertain. The mariner should check his position by other means. However, as far as practical the Lighthouse Department will announce, as usual, the changes made in the aids, and MoTOR Boating will cooperate with the Department by printing in each issue a list of the recent changes announced.—Editor.

MAINE

Petit Manan Light Station—Fog signal changed to an air whistle to sound a blast of 3 seconds' duration every 30 seconds. Blast 3 seconds, silent 27 seconds.

MAINE, NEW HAMPSHIRE AND MASSACHUSETTS

Seacoast, Cape Neddick to Cape Ann, Portsmouth Harbor and Approaches—Caution. Wire drags are now and will continue to be operated until October 15, by a Coast and Geodetic Survey party engaged in searching for dangers to navigation in Portsmouth Harbor and along the coast between Cape Ann and Cape Neddick.

Vessels are advised that the long wire drags (generally three-quarters of a mile, but which are sometimes 5 miles in length) may be crossed without danger of fouling at any point except between the towing launches and the large buoy near them where the towline approaches the surface.

Steamers passing over the drag when it is in motion are requested to alter their course so as to cross it in the direction of its progress or in the opposite direction, as a diagonal course may cause the propeller to foul the small uprights, consisting of buoys and wires. They should not pass too close to the towing launches, as their slow speed and connection with the drags makes it impossible for them to maneuver rapidly.

Sailing vessels can cross the drag at any angle, but are also requested not to pass between a large buoy and the launch near it, also to avoid coming too close to the towing launches, the character of the tow making it difficult to maneuver.

It will be necessary to place small spar buoys, consisting of bamboo poles with red and black flags as guides to fishermen in removing lobster pots and other fishing gear. These will be shifted from time to time. They in no way resemble navigation buoys and should be disregarded by navigators.

MASSACHUSETTS

Sandy Bay (Rockport Harbor)—Flat Ground North End Buoy, 1, changed to a 1st-class spar.

Provincetown Harbor—Race Point Light Station—Fog signal changed to an air whistle, sounding a group of 2 blasts every 60 seconds; blast 3 seconds, silent 3 seconds, blast 3 seconds, silent 51 seconds.

Buzzards Bay—Canal Channel—Changes in lights and buoys:

Canal Channel Gas Buoy, 3, moved about 400 yards S^W, and re-established in 4 fathoms of water.

Canal Channel Gas Buoy, 4, moved and re-established in position of former Canal Channel Buoy, 4A, discontinued.

Canal Channel Buoy, 5, 1st-class spar, established in the position of former Canal Channel Light, No. 5, discontinued.

Canal Channel Buoy, 9, 1st-class spar, established in position of former Canal Channel Gas Buoy, 5A, discontinued.

Canal Channel Gas Buoy, 7, established, in 4 fathoms of water; shows an occulting white light of 5 seconds' duration every 10 seconds, 10 candlepower.

Canal Channel Buoy, 4B, renumbered 6.

Canal Channel Buoy, 5B, renumbered 11.

Canal Channel Light and Fog Signal, No. 8, established in the position of former Canal Channel Gas Buoy, 6, discontinued; light is fixed red, 50 candlepower, 15 feet high; fog signal is an electrically operated bell, sounds one stroke every 10 seconds; structure is riprap with cement capping.

Canal Channel Buoy, 13, 1st-class spar, established in the position of former Canal Channel Gas Buoy, 7, discontinued.

Canal Channel Gas Buoy, 10, established, in the position of former Canal Channel Light, No. 6A, discontinued; shows an occulting red light of 5 seconds' duration every 10 seconds, 3 candlepower.

Canal Channel Bell Buoy, 12, established, in the position of former Canal Channel Light, No. 8, discontinued.

Canal Channel Light, No. 9, rebuilt and renumbered 15, 15 feet high; structure is riprap with cement capping.

Canal Channel Buoy, 17, 1st-class spar, established, in the position of former Canal Channel Light, No. 11, discontinued.

Canal Channel Gas Buoy, 19, established in the position of former Canal Channel Buoy, 11A, discontinued; shows an occulting white light of 5 seconds' duration every 10 seconds, 10 candlepower.

Canal Channel Buoy, 8A, renumbered 14.

Canal Channel Light, No. 10, rebuilt and renumbered 16, 15 feet high; structure is riprap with cement capping.

Canal Channel Gas Buoy, 13, renumbered 21.

Canal Channel Buoy, 13A, renumbered 23.

Canal Channel Light, 12, renumbered 18.

Canal Channel Buoy, 25, 1st-class spar, established, in the position of former Canal Channel Light, No. 15, discontinued.

Canal Channel Buoy, 20, 1st-class spar, established, in the position of former Canal Channel Light, No. 17, discontinued.

Canal Channel Light, 1614, rebuilt and renumbered 20, 15 feet high; structure is riprap with cement capping.

RHODE ISLAND

Narragansett Bay, Eastern Passage—Dyer Island Shoal Southeast Buoy, 1, moved into 3½ fathoms of water and changed to a 2d-class spar.

Narragansett Bay—Eastern Passage Gas Buoy, 4B, established in 26 fathoms of water. The gas buoy is spar-shaped and shows a fixed white light of 10 candlepower 13 feet above water.

Providence River—Pawtuxet Buoy, 1, established a 4th-class spar in 2½ fathoms of water in place of Pawtuxet Beacon which was then discontinued.

NEW YORK

Gardiners Bay—Shelter Island Sound—Black Dog Rocks Buoy, 5, established a 4th-class spar, in about 1¼ fathoms of water, to mark the limits of the 10-foot shoal as well as the rocks.

New York Upper Bay—Greenville Piers Channel—Greenville Channel Gas and Bell Buoy, 4PR, established in about 3¼ fathoms of water in place of Greenville Channel Bell Buoy, 4PR, which is discontinued.

The buoy is cylindrical, with skeleton superstructure, showing a flashing white light every 2.25 seconds, flash 0.75 second duration, of 15 candlepower, 10 feet above water, visible 3¼ miles.

East River—Dumping Buoy, 1, established a 2d-class spar in 3 fathoms of water on Brooklyn side of river, just north of Queensboro Bridge.

Hudson River and New York Upper Bay—Anchor Grounds Buoyage to be changed:

Naval Anchorage, 19, North Buoy, white, 1st-class spar, moved out, in 10 fathoms of water, to mark west limit of Anchorage 19.

Naval Anchorage, 19, South Buoy, white, 1st-class spar, moved out, in 8 fathoms of water, to mark southwest limit of Anchorage 19.

Anchorage Buoy, A, white, 2d-class spar, discontinued, limits of Anchorage Ground 20A having been changed.

Anchorage Buoy A, off Red Hook, white, 1st-class spar, marking the north corner of Anchorage 21, moved into 4½ fathoms of water, to mark the new northwest limit of the anchorage.

Anchorage Buoy, A, off Tompkinsville, white, 1st class spar, moved into 9 fathoms of water, to mark new limit of Man-of-War Anchorage, 23A.

Anchorage Buoy, A, off St. George, white, 1st-class spar, moved into 8 fathoms of water, to mark new limits of Man-of-War Anchorage, 23A.

NEW JERSEY

Delaware Bay Approaches—Overfalls Lightvessel replaced on station and Relief Lightvessel withdrawn.

Great Egg Waterway—Buoys changed:

Buoy, 14, color changed to black and renumbered 15, a change in the channel having made it a port buoy.

Buoy, 16, renumbered 14.

Buoy, 18, renumbered 16.

New York Lower Bay Approach—Scotland Lightvessel replaced on station, June 4, and Relief Lightvessel then withdrawn.

Raritan Bay—Conasconk Point Shoal Gas Buoy, 3, established, and Conasconk Point Shoal Buoy, 3, discontinued. Gas buoy is conical with skeleton, superstructure, showing a white light, occulted every 10 seconds, light 5 seconds, eclipse 5 seconds, of 10 candlepower, 10 feet above water; visible 4 miles, to be maintained on station from April 1 to December 15 of each year and replaced by a 2d-class spar buoy during the winter.

Seacoast—Five-Fathom Bank Lightvessel replaced on station and Relief Lightvessel withdrawn.

DELAWARE

Delaware River—Bulkhead Shoal Channel—Delaware City Light re-established, 27 feet above water, on the end of a wharf, 120 yards northwesterly from its former location, shows red to westward of 309° and 154° and white to eastward; no other change.

PENNSYLVANIA

Delaware River—Navy Yard Anchorage Buoys established, each a white, 1st-class spar.

MARYLAND

Potomac River—Bretton Bay—Lovers Point Light moved about 150 yards S^W from its former position into 1½ fathoms of water, to mark the outer end of the shoal; Lovers Point Buoy, 6, discontinued.

Tangier Sound—Nanticoke River—Clay Island Shoal Light—Structure rebuilt and light re-established.

Baltimore Harbor—Cable buoys established and buoy moved to mark electric cable crossing main channel.

Cable Buoy, A, a white, 3d-class spar, marked "Cable A," established in about 2½ fathoms of water, on edge of shoal, at angle in course of cable, about 200 yards from the bulkhead line.

Spring Garden Channel Entrance Buoy, 1, moved about 50 yards 133° from its present charted position, to mark where the cable crosses the southerly edge of the dredged channel and marked "Cable B" in white.

Cable Buoy, B, a white, 1st-class spar, marked "Cable B," established in about 5 fathoms of water, where cable crosses edge of dredged channel, about 650 yards 161° from Lazaretto Point Light.

Baltimore Harbor—Buoys to be established—Buoy moved.

Canton Company Channel Buoy, 18M, moved about 20 yards 321° from its present charted position, to mark the junction of the main channel and newly dredged channel.

Ore Pier Channel Buoy, 1, 2d-class spar, to be established in about 4 fathoms of water, to mark the first angle in the dredged channel.

Ore Pier Channel Buoy, 2, 2d-class spar, to be established in about 4 fathoms of water, to mark the second angle in the dredged channel.

Chesapeake Bay—Main Channel—Henry S. Lawson Wreck Gas Buoy, HS, established in 8¼ fathoms of water, about 100 yards 181½° from wreck.

Buoy is conical with skeleton superstructure, and shows an occulting white light every 10 seconds,

light 5 seconds, eclipse 5 seconds, of 10 candlepower, 10 feet above water.

Chesapeake Bay, North End—Craighill Channel Range Rear Lower Light, established about a fixed white of 160 candlepower, 50 feet above water from the rear of structure of Craighill Channel Range Rear Light, with arc of visibility of about 200°, showing over Bark River and Hawk Cove. Has a red sector of 14° from 174° to 188°, its eastern edge cutting on Drum Point Buoy, 3, and its western edge cutting on Rocky Point Buoy, 4, Hawk Cove.

Chesapeake Bay—Love Point to Turkey Point—Sassafras River—Florence O'Brien Wreck Gas Buoy HS discontinued, the wreck having been removed.

Susquehanna River—Fishing Battery Light—Light changed to flashing white every 5 seconds, flash 1 second duration of 30 candlepower.

VIRGINIA

Potomac River—Machodoc River—Barnes Point Shoal Light—Structure rebuilt and light re-established; characteristic of light changed permanently to fixed white of 60 candlepower.

Assateague Anchorage—Fishing Point Light—Characteristic of light changed to flashing every 10 seconds, flash 1 second duration.

Chesapeake Bay—Hampton Roads Approach—Willoughby Bank Gas Buoy, 17, temporarily discontinued.

Chesapeake Bay, East Side—Cape Charles Quarantine—Postponement—Changes made in buoyage.

Lower Inner Middle Ground Buoy, HS, color changed to black and numbered 1.

Quarantine Buoy, 1, number changed to 3.

Upper Inner Middle Ground Buoy, HS, color changed to black and numbered 5.

Seacoast—Beacons to be established—Stakes to be discontinued.

Beacons to consist each of a pile with slatted daymark, established as follows:

SAND SHOAL INLET

Channel Beacon, 1, in the position now occupied by Channel Stake, 5.

Man and Boy Channel Beacon, 3, in the position now occupied by Man and Boy Channel Stake, 7.

New Marsh Channel Beacon, 5, in the position now occupied by New Marsh Channel Stake, 11.

Curlew Bar Channel Beacon, 7, in the position now occupied by Curlew Bar Channel Stake, 15.

SMITH ISLAND INLET AND MAGOTHY BAY Middle Ground Beacon, 2, on north side channel to Cape Charles wharf.

Magothy Bay Channel Beacon, 1, on edge of shoal, northeast of Long Point Island.

Magothy Bay Channel Beacon, 4, at turn in channel.

Magothy Bay Channel Beacon, 6, in the position now occupied by Magothy Bay Channel Stake, 4.

Magothy Bay Channel Beacon, 3, in the position now occupied by Magothy Bay Channel Stake, 1.

Magothy Bay Channel Beacon, 8, opposite mouth of channel to Capeville.

Stakes to be discontinued.

SAND SHOAL INLET

Channel Stake, 5.

Man and Boy Channel Stake, 7.

Cockle Point Creek Stake, 6.

New Marsh Channel Stake, 11.

Curlew Bar Channel Stake, 13.

Curlew Bar Channel Stake, 15.

SMITH ISLAND INLET AND MAGOTHY BAY Middle Ground Stake, 2A.

Middle Ground Stake, 2B.

Magothy Bay Channel Stake, 3C.

Magothy Bay Channel Stake, 2D.

Long Point Island Stake, 1A.

Magothy Bay Channel Stake, 2A.

Magothy Bay Channel Stake, 4A.

Magothy Bay Channel Stake, 4.

Magothy Bay Channel Stake, 1.

Magothy Bay Channel Stake, 6.

Point of Marsh Stake, 3.

Center Lump Stake, 8.

John E's Turn Stake, 10.

Center Rock Stake, 12.

York River—Fillbates Creek Flats Light established, fixed white, of 40 candlepower, on a black, 3-pile slatted structure, in about 1½ fathoms of water, about 1¼ miles 203½° from Bells Rock Light-house; to mark the turning point in the channel.

Pocomoke Sound—Tunnel Island Spit Light established, flashing white every 20 seconds, flash 1 second duration, of 30 candlepower, 16 feet above water, on a 3-pile slatted structure, in about 1 fathom of water, on the end of the shoal, 2¼ miles 305½° from Guilford Flats Light.

Tunnel Island Gas and Bell Buoy, PS, and Tunner Island Spit Buoy, 4, discontinued.

Chesapeake Bay, East Side—Pungoteague Creek—Hack Neck Shoal Light—Structure rebuilt and light re-established.

Chesapeake Bay, East Side—Onancock Creek Light—Structure rebuilt and light re-established about 300 yards 270° from its charted position and Onancock Creek Buoy, 1, spar, temporarily marking the site, discontinued.

Chesapeake Bay—Pocomoke Sound—Guilford Flats Light—Structure rebuilt and light re-established about 200 yards 226° from its charted position.

Chesapeake Bay, West Side—Dividing Creek—Lights to be discontinued—Beacons to be established.

Hughletts Point Light to be discontinued and Hughletts Point Beacon, a red pile surmounted by barrel, to be established in its place.

(Continued on page 48)

Yard and Shop

Mullins Export Trade Flourishes

At least one line of American trade with foreign countries has not languished, for it is declared that the addresses on shipments of Mullins boats to foreign ports read like a list of nations of the world—except, of course, those beleaguered countries which are vainly trying to assert their fancied right to dominate the universe. Sales Manager Jarvis of the W. H. Mullins Co., of Salem, O., says that while the export business has naturally fallen off some, the trade has been surprisingly good when the handicaps of high freight rates and the difficulty of securing bottoms at any price is considered. South America comes in for a large share, Portuguese West Africa looms up as a good market, and China and the Fiji Islands are included in a very long list. The heading illustration this month represents the Royal Yacht Club at Alicante, Spain, where, it is stated, Mullins craft enjoy ever-increasing popularity.

Pickering Joins Foundation Co.

The announcement was recently made that A. B. Pickering has taken a position with the Foundation Co., of New York City, in the capacity of naval architect and marine superintendent for this concern's varied ship interests. Mr. Pickering was formerly with the firm of A. B. Pickering & Co., Inc., designers and builders of boats for the Great Lakes and the Pacific Coast.

Missouri Engine Results

The Missouri Engine Co., of St. Louis, Mo., is a firm believer in results, and builds its various types of engines in the conviction that action speaks louder than words. A recent booklet issued by this concern is gotten together according to this gospel, and contains instead of promises the actual records of what Missouri engines have done in boats of all types. The testimonial letters included are from owners from all points of the compass and the list comprises representative commercial houses in most of our leading cities. Altogether the booklet is a most convincing endorsement of this type of marine motor.



Manatee, used by the Government for patrol service, is 35 feet in length and, equipped with a six-cylinder Sterling engine, attains a speed of 28 m.p.h.

Scripps Strikes the Right Note

While we should be the last to assert that the boat and engine industry or the followers of the sport of motor boating are in a hysterical state because of participation in the Great War, it strikes us that a letter which the Scripps Motor Co., of Detroit, Mich., has sent to its dealers expresses so eloquently the extreme value of calmness and normality that it is worthy of publication in full. In citing its own increases in business under war conditions the Scripps company but illustrates a state of affairs which can and will exist for the duration of the war if everyone works hard and maintains an attitude of cheerful determination. The letter follows:

"Gentlemen:

"With businessmen in every branch of trade and industry asking themselves what effect the war will have on business, it is no wonder that the motor boat industry should be thinking seriously on the same subject. The country is in an exceedingly safe and prosperous condition. There is no need of alarm in any line of business. This is the consensus among bankers and the best informed commercial men everywhere.

"Of course, you want to know what effect it is going to have on your business—the boat and engine business. The best way to find out is to consider conditions in Canada, now in its third year of the conflict. We recently went over the record of our sales from the beginning of our fiscal year Sept. 1, 1915, down to June 1, 1916. This period we compared with the business from Sept. 1, 1916 down to the present June 1, 1917. Dividing our total business into United States, Canadian and foreign business, we find the following increases:

ahead, because war has actually put more money into circulation and they are spending it for the good things of life.

"Certainly then with the activity of the United States, the wonderful resources of this country and the big amount of money that will immediately be put into circulation by the government there is no reason why boat builders and engine dealers in the United States should have any cause for fear. We believe that prosperity has been here, is here and is here to stay.

"The Scripps Motor Co., is staking its future on this firm conviction. As a result there will be no let-up in our activity. We haven't canceled one cent's worth of orders for parts or material; in fact, we are ordering more. We haven't laid off one man in our shop; in fact, are taking on more. That's one reason why we are in such good shape to give delivery and service right now. If everybody in every line of work will go along in the same way prosperity will be here in even greater measure now and for years to come. We think that you as one vitally interested in the boating industry should know these facts.



Handsome quarters of the Royal Yacht Club at Alicante, Spain, where Mullins boats increase in popularity every year

"Canada, 211 per cent.

"United States, 201.8 per cent.

"Foreign, 156 per cent.

"This shows a good, big, healthy increase in regular marine engine activities. We have no war contracts and no war business.

"Canada is leading in our business—showing greater activity. Mind you, that doesn't mean that we have got twice as much business in this period as in the same preceding period, but three times as much. We all have the most profound respect for our cousins over the border as fighting men. Our hats must be lifted to them as men of good business sense as well. They are not getting 'cold feet,' are not hoarding, are not 'lying down' but are going

"England is more prosperous than she ever was. We've shown Canadian activities and increases in our business greater than here or abroad, so let's all go ahead. Don't let business slow up but take care of it and consider it as good as ever and it will be even better.

"Let everybody take care of his own business as usual and business in general will take care of itself. We are in good shape. The country is in splendid shape, so let's follow the slogan, 'Business as usual, only more so.'

"Very sincerely yours,

"SCRIPPS MOTOR CO.,

"Detroit,

"Mich."

Game Warden Recommends Pull-U-Out

The Pull-U-Out Sales Co., of St. Louis, Mo., has received the following letter from Harry P. Felgate, of Winona, Minn., a Minnesota deputy game warden and also a Federal warden: "For nearly seven years I have patrolled the Mississippi as a game warden, and own, as a matter of course, several motor boats, and can see where a tool of the character you advertise can be made part of every motor boatman's equipment. While you show one of your hoists elevating an engine, I can see the many greater uses to which this tool can be put to, such as lifting the boat complete to replace broken wheels and broken



One of the many attractive round-bottom runabouts built by the Everitt Hunter Boat Co., and equipped with a Gray motor



Marjo, an attractive 40-foot express cruiser, built for Joseph McAleenan, of New York City, and powered with an eight-cylinder Duesenberg motor. She is an Albany product of unusual speed and distinction



A 36-foot cruiser owned by O. J. Mulford, and built from the designs of Carlton Wilby, of Detroit. She is powered with two Model D Gray motors



The 40-foot Great Lakes cruiser with which Harry Stutz, of motor car fame, hopes to extend his speed kingdom to the water. Needless to say, Mr. Stutz has selected a Wisconsin motor for his power plant

Manatee Chosen for Patrol Service

Of the many privately owned motor boats accepted for Government service, Manatee is most unusual in that she is but 35 feet in length, while specifications particularly call for a minimum of 40 feet long. Manatee is a V-bottom boat, formerly owned by L. S. Percival, of Boston. She makes 28 real miles with a six-cylinder Sterling. The motor is enclosed amidships in a well ventilated cabin and under the forward decks are tanks, wash room, lockers, etc. Manatee is admirably adapted for service.

Marjo, a Sensational Albany Craft

One of the boats illustrated on page 35 is the new 40-foot Marjo, built by the Albany Boat Corp., of Watervliet, N. Y., for Joseph McAleenan, of New York City, and powered with an eight-cylinder Duesenberg motor. Marjo, with a speed of 35.3 m.p.h. attained on her maiden trials, is one of the fastest express cruisers of the 1917 season, and is in addition a boat of pleasing appearance, sweet running qualities and unusual accommodations. Her trial trips were made with a party of twelve persons aboard, and the speeds were averaged from trips made up and down the stream. This achievement is particularly noteworthy when it is considered that it was attained without preliminary experiments with propellers, etc.

Thompson Takes Reins from Hand

Upon the appointment of W. H. Hand, Jr., as assistant to the U. S. Shipping Board, it was announced that his business will be carried on by R. M. Thompson, under Mr. Hand's personal direction. Mr. Thompson has been closely associated with Mr. Hand for several years past and thoroughly understands the construction of Hand boats. Under the new arrangement he will have a more active part in their building, and according to the theory that two heads are better than one, it is expected that the public will receive service which is as good, if not better than ever before.

O. J. Mulford's Latest Cruiser

O. J. Mulford, president of the Gray Motor Co., of Detroit, Mich., has owned more boats than he can remember. The latest is a 36-foot cruiser which he recently launched at Miami, Fla., which, he says, is the best ever. This boat was designed by Carlton Wilby, of Detroit, and was built at Miami, and is an example of the good construction and high quality of workmanship that the Southern yards are now turning out. The power plan follows out Mr. Mulford's firm belief in twin-screw installation for small cruisers, as it consists of a pair of the well-known Model D 20-24 h.p. four-cylinder four-cycle Gray motors, complete with high tension magneto ignition and built-in and enclosed reverse gear. Mr. Mulford's new cruiser is complete in every particular, fitted with wide and comfortable transom berths, and is a trim and comfortable cruiser. The boat makes 12 m.p.h. with its twin Gray.

New Express Cruiser for Motor Car Manufacturer

Harry Stutz, of Indianapolis, who put the racing car on the map, has decided to go in for yachting, and to this end has purchased a 40-foot express cruiser from the Great Lakes Boat Building Corp., at Milwaukee, Wis.

The power plant installed in Mr. Stutz' boat is a happy reminder of the way in which his famous racing car was developed. Year after year foreign cars came over and captured the first prizes in all racing events, much to the annoyance of American

manufacturers. In order to demonstrate that Yankee ingenuity was equal to the occasion, Mr. Johns, president of the Wisconsin Motor Co., of Milwaukee, volunteered to build a motor that would win the race if Mr. Stutz would develop a chassis. An agreement was quickly reached between Mr. Johns and Mr. Stutz, with the result that, for the first time in 1911 an out-and-out American car captured the first prizes in the Speedway races. When Mr. Stutz got around to the proposition of buying an express cruiser, he again, naturally, turned to Mr. Johns of the Wisconsin



Philger is a 32-foot runabout owned by Gordon S. P. Kleeborg, of New York. Equipped with a 25-30 h.p. Buffalo auto-marine motor she gives a speed of 18 m.p.h.

Motor Co. for a power plant with the result that he is now using a six-cylinder, 44x5 1/2-inch Wisconsin engine. The new express cruiser, which will have her home port on Lake Winnebago, is a 40-footer, with 10-foot beam.

Durkee's Scientific Tide Table

Chas. D. Durkee & Co., of 2 South St., New York City, have issued a handy tide calculator which they will mail postpaid for 25 cents. An index of the important points on the coast from Maine to Florida has been prepared, based on mean tidal variations deduced from the U. S. Government tide tables, and by use of the index numbers in conjunction with a movable disc which is attached to a "dumb" clock dial on the cover of the booklet it is possible to figure the time of high water on any day of the calendar year 1917.

Universal Joints for Motor Boats

The necessity for the use of universal joints in shaft installations where the angle of mounting the

engine is too great to permit of a straight line drive is well recognized by all motor boatmen, but the Blood Bros. Machine Co., of Allegan, Mich., declares that it is possible to nullify the benefits of a flexible drive by installing the wrong kind of joint. It is said that the construction of Blood joints, on the other hand, is such that they are able to transmit practically the full power of the motor. It is pointed out that the chief point of difference between Blood Bros. joints and the ordinary type is in the method of lubrication. In this concern's joints each bearing is individually lubricated and the grease is positively retained by a threaded cap which not only provides protection for the bearings but removes any danger of the joint's running dry and becoming overheated. Correspondence not long ago with a motor boat repair man of Brooklyn, N. Y., brought out interesting information in regard to a Blood Bros. joint which had been subjected to a thorough spraying with sea water and was then left standing for some time. The joint, being of steel construction throughout was of course badly rusted, and at first glance the repair man was convinced that a new joint would be needed. However, after he had removed the rust and taken the joint apart he found that the vital members, the journal bearings, had not been injured. The company cites this as just one instance of the way in which its plan of enclosing each bearing separately gives positive protection.

Murphy Varnish Booklet

The Murphy Varnish Co., of Newark, N. J., has sent us a catalogue describing and illustrating the varnishes and enamels which it manufactures for use on all types of boats. These products are prepared both for interior and exterior application, and among those recommended are: Murphy transparent spar

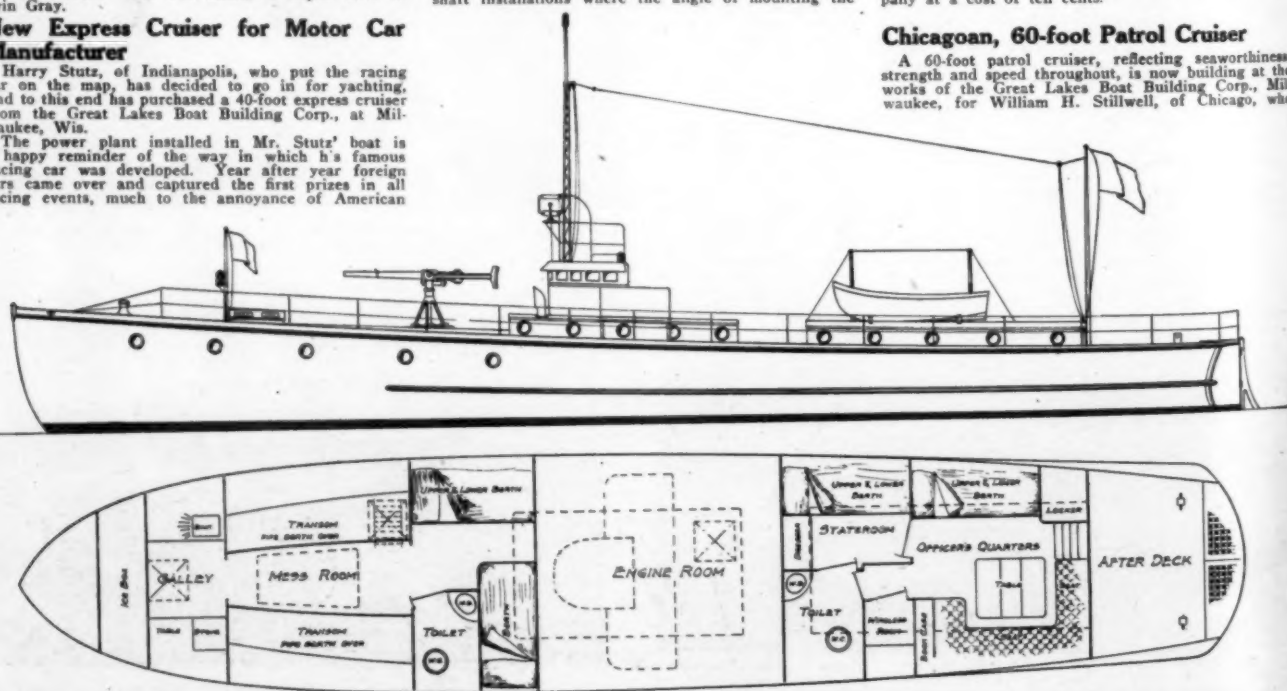
varnish, transparent interior varnish, white enamel, semi-gloss enamel, and enamel undercoating. Murphy transparent spar varnish is particularly adapted for use on exterior work on yachts and pleasure boats, or any surface exposed to salt air, rough weather and hard use. It is stated that its superior preservative and anti-damp qualities make it especially valuable for these purposes.

New Caille Booklet

We have received from the Caille Perfection Motor Co., of Detroit, Mich., a booklet describing the installation, operation and care of two-cycle marine motors and equipment. In publishing this booklet the Caille people have tried to make it as comprehensive as possible, so that it may be easily understood by the amateur motor boatist who is running his first motor and who knows little or nothing about the mechanical end of boat trouble. This booklet, which is of convenient size, is published by the Caille company at a cost of ten cents.

Chicagoan, 60-foot Patrol Cruiser

A 60-foot patrol cruiser, reflecting seaworthiness, strength and speed throughout, is now building at the works of the Great Lakes Boat Building Corp., Milwaukee, for William H. Stillwell, of Chicago, who



Profile and arrangement plan of a 60-foot patrol-type cruiser which is now under construction at the yards of the Great Lakes Boat Bldg. Corp., for Wm. H. Stillwell, of Chicago



Ann Bryce, a 23-foot semi-tunnel runabout, built by the Valley Boat Co., for Thomas Olif, of Clio, Mich. She is powered with a Model D 20 h.p. Gray motor



Ferro II, a novel 22-foot shallow draft boat, was designed especially for use in the waters of the Amazon country. She is powered with a 10 h.p. Ferro

has already entered his boat in the patrol squadron. Mr. Stillwell's 60-footer is somewhat similar in general appearance to the 110-foot submarine chasers which the Navy Department has recently ordered. This design recommends itself for the reason that it permits great structural strength in the fore and aft stress members. This possibility has been seized upon by the builders of the patrol cruisers and the strength accentuated very materially by means of the use of sawed frames, steam bent ribs and battens running from stem to transom, all spaced on short centers and backing up each plank seam. A fabricated structure is built up in this way, which is said to be practically indestructible and which cannot open in a sea.

The arrangement plan contemplates six compartments; galley in the forepeak, followed by crew's quarters, petty officers' quarters, engine compartment, captain's stateroom and junior officers' quarters—the design being so worked out as to give very large deck space, which is highly desirable. The main armament, which is to consist of a 6-pounder, is carried forward of the conning tower on a heavy foundation, reinforced to the frames and carried to the keel with pipe stanchions, in accordance with the latest and best practice.

The bridge deck, over the engine compartment, is protected with an approved conning tower, which is arranged with a lookout position on the roof. A steel mast is provided to carry signals and wireless equipment. A 9-inch Carlyle and Finch searchlight is

Michigan Gear Co. Changes Name

The Michigan Standard Gear Co., of Detroit, Mich., has recently changed its name to the Langtry Machine & Tool Co., although the gear will still be continued under the name of the Michigan Standard. Owing to the growing demand for this gear the company has found it necessary to increase its production facilities. Consequently it is moving into larger quarters, a modern two-story building, which is to be at least four times as large as the present factory. The new building is to be used exclusively for the manufacture of this product and the gear business will be pushed more energetically than ever before.

Piston Ring Leakage

The unfortunate propensity of exploded vapors to work their way past the piston rings into the crankcase and of lubricating oil to creep up into the combustion chamber is a matter which has disturbed more than one engine owner. The No-Leak-O oil-sealing piston ring manufactured by the Automobile Accessories Co., of Baltimore, Md., is claimed to remedy such trouble by reason of its being so constructed that it forms a dam between the two chambers. A deep groove is cut around the face of the ring and this in combination with the lap joint, makes an oil pocket which, it is said, not only prevents the passage of gases but provides maximum lubrication and consequent minimum friction. The difference

dition under which his power plant must operate, and so, by securing the wrong type of motor, stores up trouble for himself and endless tribulations for the maker. Mr. Burnham's article sheds a great deal of light on an interesting subject, and its dissemination in booklet form should be of benefit to the entire industry.

"Answering the S. O. S."

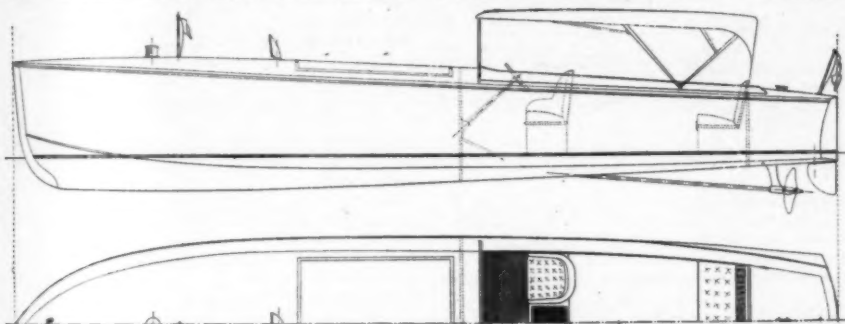
On page 12 of this issue is the third of a series of Motor Patrol paintings by William H. Foster, entitled "Answering the S. O. S." The boat in the foreground is taken from the lines of the 66-foot Government patrol boat, designed and built by the Luders Marine Construction Co., plans and description of which appeared in the April issue of MoToR Boating. The reader will observe the distant signal consisting of a ball and two cones displayed from the yard arm which signifies, "Assistance is Coming." The other boat in the foreground is a modern American torpedo boat destroyer of the type which is now doing patrol duty with those of our allies, off the British and European coasts.

Packard Electric Benefit Plan

At a recent meeting of the Packard Electric Co., of Warren, O., it was announced that the company has purchased a group of life insurance contracts which insures the life of every employee for the amount of one year's salary. The insurance increases with salary increases, and also provides an increase of \$100 for each year of service after December 1, 1916, with a maximum increase of \$500. The premiums are paid entirely by the Packard company and have no bearing whatsoever on the welfare activities of the employees themselves.

In announcing this new benefit plan, N. A. Wolcott, president of the company, stated that it was not an experiment for the purpose of feeling out the attitude of the employees. Having worked his way through the electrical industry he knows the viewpoint of the employee as well as that of the employer, and he declared that the employees of the Packard company would recognize this benefit as the logical outcome of the past policy of the company. This policy, he said, has been to educate the employees to a realization that their interests and the company's were alike and that anything which the former did to further the interests of the company would invariably meet with approval substantially shown.

In addition to the insurance policy the meeting was marked by the presentation of a bonus to those employees who have been with the company for five years or more, the amount of the bonus being governed by the length of time each recipient had been connected with the company.



Plans of a 28-foot V-bottom demonstrator runabout built by Hutchinson Bros., and to be powered with a four-cylinder Model F Sterling motor

mounted directly over the conning tower and is controlled by the helmsman. Mr. Stillwell's patrol cruiser will be powered with two eight-cylinder 6x6-inch Van Blerck motors, which will give her a turn of speed of 24 m.p.h.

A Michigan Outfit Worth Owning

Ann Bryce is the name of a semi-tunnel runabout which has just left the ways of the Valley Boat Co., of Saginaw, Mich. Ann is the property of Thomas Olif, of Clio, Mich., and the boat will be used on Houghton Lake, in the central part of Michigan. The boat is 23 feet long and is built with very nice lines, giving a clean running boat free from spray even in rough water. At the same time the hull is of decidedly sturdy construction, built for real weather.

The power plant is a Model D 20-24 h.p. Gray, which gives this boat a speed of 12 m.p.h. notwithstanding the fact that the boat is by no means light, and carries a heavy skag and shoe under the propeller.

Bickmann Appointed to Shipping Board

It has been announced that Frederick W. Bickmann, of Strong & Bickmann, Yacht Brokers, of 42 Broadway, New York City, has been appointed chief clerk in the office of the United States Shipping Board, Emergency Fleet Corp., located at 115 Broadway, New York City, which is in charge of Eads Johnson, district officer. Mr. Bickmann wishes to say that he will continue his interest in the motor boating field as much as he can.

between the plain ring and the No-Leak-O is diagrammatically shown in the accompanying drawings.

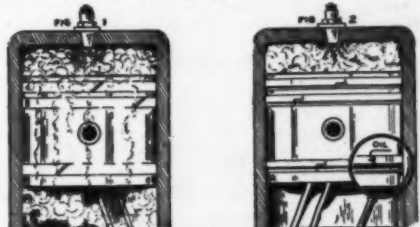
Miss Miami Equipped with Hyde Propeller

The latest sensation in speed boat circles is the remarkable performance of the hydroplane Miss Miami. According to reports, this boat has smashed all previous records and has hung up a new mark for the entire world. Like many record-breakers, Miss Miami used a Hyde turbine-type propeller, and her performance added another to the long list of Hyde-equipped speed marvels. Such fast ones as Miss Minneapolis, Miss Detroit, and Baby Speed Demon II, as well as many others, have used Hyde propellers in gaining fame, and every indication points to the fact that the Hyde is extremely efficient for speed purposes. These propellers are made for all sizes of boats from the small motor craft to the battleship.

The True Meaning of Service

The Gray Motor Co., of Detroit, Mich., has issued in booklet form, for the benefit of its customers, as well as others desiring to know the real definition of service, the article entitled The True Meaning of Service, by Bradford Burnham, which was published in the February issue of MoToR Boating. This is an attractive booklet which tells just what the motor boatman should expect from the manufacturer, and the allowance and compensations which should be effected between them.

Too often the prospective purchaser in dealing with the manufacturer unwittingly falsifies the con-

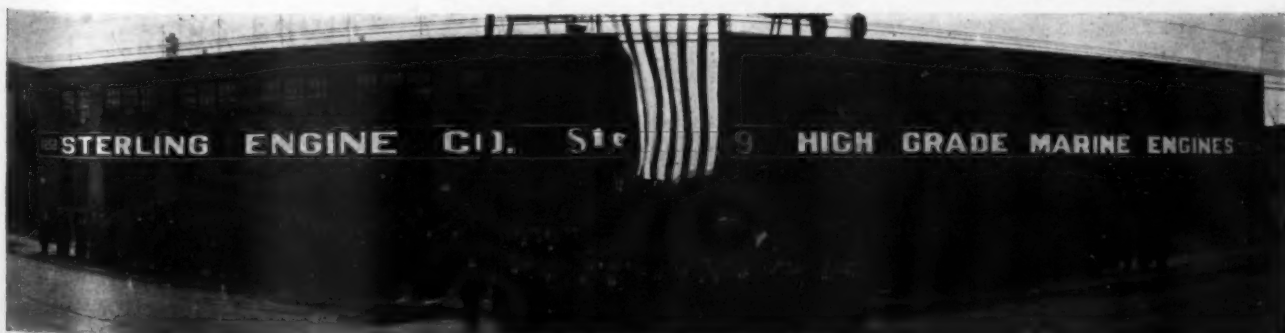


Sectional drawings which are stated to show the condition of the interior of a cylinder without and with the use of No-Leak-O oil-sealing piston rings

New Aircraft Corporation

It is announced that the Lawson Aircraft Co., of Green Bay, Wis., recently organized by Alfred W. Lawson, is backed by men who have agreed to finance the company to any extent that is required for the manufacture and sale of aeroplanes. Alfred W. Lawson has been elected vice-president and general manager, with full power to operate the plant to the best advantage, and he has already begun things at a lively rate, having engaged more than fifty expert aeroplane men, who understand the business from every conceivable angle. Most of these men have had from five to ten years of practical aeronautical experience, and, therefore, no time was lost in getting right down to a production basis.

(Continued on page 56)



Flag raising day at the Sterling works a couple of months ago was the occasion for an impressive patriotic ceremony. The whole industry is one with the Sterling Company in its determination to do its part in carrying the great war through to a successful conclusion

MOTOR BOATING ADVERTISING INDEX

Aerothrust Engine Co.	74
Albany Boat Corp.	65
Alden, John G.	48
American Manganese Bronze Co.	59
Anderson Engine Co.	34
Arrow Motor & Machine Co.	69
Automatic Bilge Bailer Co.	64
Automatic Machine Co., The	70
Automobile Accessories Co.	58

B

Baldridge Gear Co.	54
Bantam Ball Bearing Co.	75
Belle Isle Boat & Engine Co.	59
Betsey Ross Flag Co.	56
Billings-Chapin Co.	54
Boston Varnish Co.	54
Bridgport Motor Co.	54
Brooklyn Varnish Co.	54
Brooks Mfg. Co.	54
Bruns Kimball & Co., Inc.	48
Bryant & Berry Propeller Co.	62
Buffalo Gasoline Motor Co.	1
Buffalo Specialty Co.	54
Burger Boat Co.	58
Byrne, Kingston & Co.	51

C

Caille Perfection Motor Co.....	4
Calman Co., Emil.....	54
Campbell Co., A. S.....	60
Cape Cod Power Dory Co.....	58
Carleton Co., The.....	56
Carlisle & Finch Co.....	58
Carlyle Johnson Machine Co., The.....	2
Carpenter & Co., Geo. B.....	59, 60
Champion Spark Plug Co.....	98
Chase Co., L. C.....	49
Classified Advertisements.....	47
Clemente, Perez & Hijo.....	54
Columbian Bronze Corp.....	55, 97
Columbus Mfg. & Supply Co.....	54
Cox & Stevens.....	40, 48
Crockett Co., The David B.....	61
Cullen Motor Co.....	68
Curtiss Aeroplane Co., The.....	56
Curtiss Co., J. H.....	54
Cutting & Washington Co.....	59

15

Deed, Jr., W. J.....	48
Defoe Boat & Motor Works.....	86
De Forest Radio Telephone & Telegraph Co.....	54
Devoe, F. W. & C. T. Reynolds Co.....	54
Domestic Engineering Co.....	56
Draeger Oxygen Co.....	77
Driggs Ordnance Corp.....	96
Duesenberg Motor Corp.....	3
Du Pont Fabrikoid Co.....	61
Durkee & Co., Inc., C. D.....	59

E

Egyptian Deities	51
Elbridge Engine Co.....	54
Elco Co.....	2nd Cover
Ericsson Mfg. Co.....	76
Evinrude Motor Co.....	73
Excels or Propeller Co.....	59

F

Farley Co., Edw. P.....	46
Fay & Bowen Engine Co.....	99
Ferdinand & Co., L. W.....	58
Ferro Machine & Foundry Co.....	57
Frisbie Motor Co., Inc.....	53
Fyr-Fyter Co.....	76

G

Gardner & Co., Wm.....	44
Gas Engine & Power Co., and Chas. L. Seabury Co., Consolidated	70

General Aeroplane Co.....	64
Gene V-Boat Co.....	56
Gielow & Orr.....	43
Gies Gear Co.....	68
Gray, Henry.....	52
Gray Motor Co.....	93
Gray & Prior Machine Co.....	65
Great Lakes Boat Bldg. Corp.....	6
Gulf Refining Co.....	92

H

Hall Co., W. S.	74
Hall, Wilford, Laborer	52
Hand, Jr., Wm. H.	48
Heinze Electric Co.	60
Henricks Magneto & Elec. Co.	72
Holbrook-Parks Co.	58
Hyde Boat & Eng. Co.	56
Hyde Windlass Co.	69

I

Janney, Steinmetz Co.	61
Jennings Co., H. H.	45
Johns-Manville Co., H. W.	56
Johnson & Son, S. C.	88
Jones, S. M. Co., The	58
Joymotor Mfg. Co.	52

K

Kahlenberg Bros. Co.....	61
Kemp Machine Works.....	58
Kennedy Machine Co.....	52
Kermath Mfg. Co.....	100
Keystone Varnish Mfg. Co.....	66
Koban Mfg. Co.....	58
Kroh Mfg. Co.....	52

L.

Lacy Marine Motor Co.	52
Langtry Machine & Tool Co.	72
Lawrence & Co., L.	63
Life Preserver Suit Co.	63
Lipman Mfg. Co.	52
List Mfg. Co., E. J.	80
Lobe Pump & Machine Co.	52
Lockwood-Ash Motor Co.	52
Lord, Frederick K.	48
Luders Marine Construction Co.	64
Lunkenheimer Co., The.	59

M

McClellan, C. P.	52
McFarlan & Spilker Mfg. Co.	52
McQuay-Norris Mfg. Co.	78
Manzel Bros. Co.	65
Marine Compass Co.	54
Marine Equipment & Supply Co.	60
Masters, Irwin W.	71
Masten Co., G. H.	58
Mathis Yacht Building Co.	62
Matthews Co.	75
Meisel Press Mfg. Co.	52
Michigan Wheel Co.	66
Miller Gas & Vacuum Eng. Co.	68
Mills, R. S.	52
Missouri Engine Co.	52
Moto Meter Co.	90, 91
Motor Boat Supply Co.	56
Motor Specialties Co.	56
Moxley & Co., W. J.	56
Mullins Co., W. H.	52
Murphy Varnish Co.	77
Murray & Tregurtha Co.	58

14

Naval Architects & Yacht Brokers.....	48
Navy Gear Co.....	56
Nelson Blower & Furnace Co.....	52
New England Lines.....	71

New Ocean House.....	87
New York Yacht, Launch & Engine Co.....	64
Niagara Motor Boat Co.....	73
Niagara Motors Corp.....	66
Nock, Frederick S.....	48
Norma Co. of America, The.....	63
Northwestern Motor Co.....	61

3

Paragon Gear Works.....	79
Para Rubber Products Co.....	56
Peerless Marine Motor Co.....	74
Pneumatorator Co., Inc.....	48
Pull-Out Sales Co.....	78
Pyrene Mfg. Co.....	48

1

Racine Boat Co. (Racine).....	62
Red Wing Motor Co.....	64
Regal Gasoline Engine Co.....	52
Richardson Boat Co.....	56
Roberts Motor Mfg. Co., The.....	84

5

S-R Mfg. Co.	56
Sands & Sons Co., A. B.	60
Sanford, Harry W.	48
Scripps Motor Co.	83
Seaman, Stanley M.	41
Sherman, E. M.	48
Smalley General Co.	58
Smith & Co., Edw.	46
Smith Serrell Co., Inc.	65
Snow & Petrelli Mfg. Co.	67
So-Luminum Mfg. Co.	58
Standard Aero Corp.	67
Standard Co., The.	89
Standard Motor Construction Co.	2nd Cover
Standard Oil Co.	85
Standard Oil Engine Co.	48
Stanley Co., The.	48
Stearns-McKay Co.	62, 67
Sterling Engine Co.	3rd Cover

3

Tams, Lemoine & Crane.....	43
Texas Co.....	94
Thompson Bros. Boat Mfg. Co.....	59
Toppan Boat Mfg. Co.....	59
Trimount Rotary Power Co.....	47

I

Universal Motor Boat Supply Co.....	56
Universal Motor Co.....	66

y

Valentine & Co.....	39
Valley Boat Co.....	60
Van Blerck Motor Co.....	4th Cover
Viper Co., Ltd.....	80
Vom Hofe Co., Edw.....	54

V

Wakefield Brass Co.....	74
Water Craft Co.....	56
Watkins Motor Co., The.....	48
Weston Electrical Inst. Co.....	60
Wicker-Kraft Co.....	48
Wilcox, Crittenden & Co., Inc.....	59, 63
Wilmarth & Morman Co.....	48
Willis Co., E. J.....	56
Winton Engine Works.....	81
Wireless Specialty Apparatus Co.....	67
Wisconsin Motor Mfg. Co.....	68
Wright Machine Co.....	68
Wycombe Co., Inc.....	74

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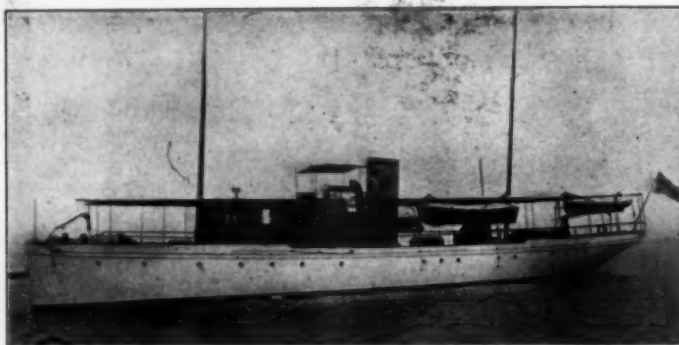
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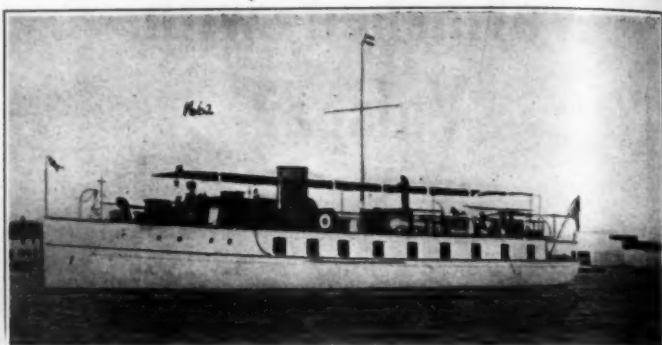
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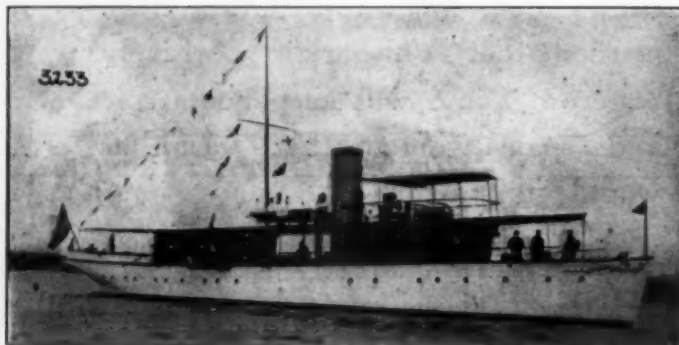
We have a complete list of all steam and power yachts, auxiliaries and houseboats available FOR SALE and CHARTER. A few are shown on this page. Plans, photographs and full particulars furnished on request. Catalogue illustrating types and sizes of yachts we have for sale will be mailed on application.



No. 883—For Sale—Unusually able power yacht; 94 x 18 x 6 ft. Suitable for Patrol Service. Speed up to 15 miles. Deck dining saloon, three double staterooms, two bathrooms, pilot house with large berth, etc. Electric lights; hot water heat. Cox & Stevens, 15 William Street, New York.



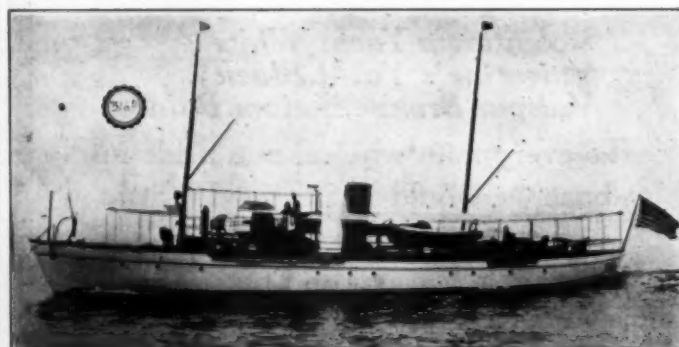
No. 1662—For Charter—Attractive 90 ft. twin screw gasoline houseboat; speed 10-12 miles. Large saloon, four staterooms, two bathrooms; all conveniences. Handsomely furnished. Cox & Stevens, 15 William Street, New York.



No. 3233—For Sale or Charter—Particularly desirable 123 ft. steel steam yacht. Speed up to 17 miles. Recent build. Dining saloon and social hall on deck; five staterooms, two bathrooms, etc. Cox & Stevens, 15 William Street, New York.



No. 1728—For Sale or Charter—Best keel auxiliary schooner yacht of good size available; 114 ft. over-all 80 ft. waterline, 23 ft. beam, 10 ft. draft. Lawley built. Speed under power 9 knots; 100-125 H.P. 6 cylinder Standard motor. Large accommodation. Cox & Stevens, 15 William Street, New York.



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No. 3284—For Sale—72 ft. fast, twin screw power yacht (adapted for patrol duty). Speed up to 19 miles. Launched Fall 1915. Highest grade construction and power plant. Saloon, two double staterooms, bath, etc. Cox & Stevens, 15 William Street, New York.



No. 2690—For Sale or Charter—Bridge deck cruiser; 63 x 13.6 x 4 ft. Speed up to 12 miles; 50/65 H.P. "20th Century" motor. Accommodations include double and single stateroom, saloon, bath and toilet room, separate galley, etc. Finished in Honduras mahogany. Cox & Stevens, 15 William Street, New York.



No. 414—For Sale or Charter—Steel gasoline houseboat; 62 x 14 x 2 ft. Speed 8 miles; 6 cyl. Sterling motor. Large saloon, five staterooms, bath, etc. Low figure. Cox & Stevens, 15 William Street, New York.

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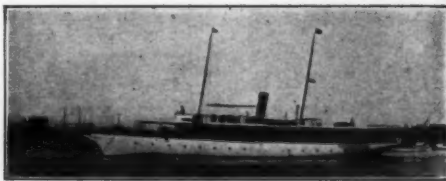
Having recently interviewed the Assistant Secretary of the Navy at Washington regarding the acceptance by the Government of yachts suitable for Patrol service, we will gladly furnish desirable information that will help prospective purchasers come to a quick decision on any yacht intended for Government use.

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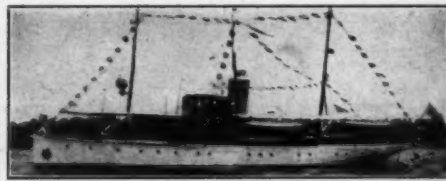
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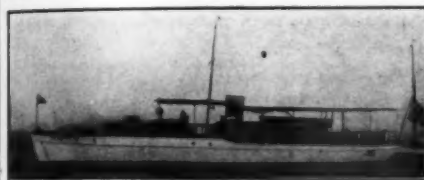
7482—The only large triple screw steel Gasoline Yacht available. Passed Government inspection. Immediate delivery. Stanley M. Seaman, 220 Broadway, New York.



5233—Estate desires immediate sale of this fine 115-ft. steam yacht, offering 4 staterooms, 2 baths. Very economically maintained. Bargain to quick buyer. Stanley M. Seaman, 220 Broadway, New York City.



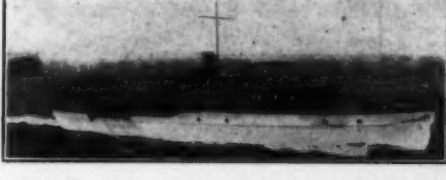
7920—95 foot Offshore Cruiser. In commission. Passed Government inspection. Immediate delivery. Stanley M. Seaman, 220 Broadway, New York.



8594—68 foot Twin Screw Matthews Cruiser. 2 double staterooms. Bath. In commission. Stanley M. Seaman, 220 Broadway, New York.



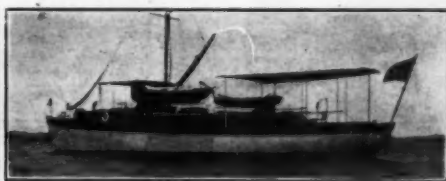
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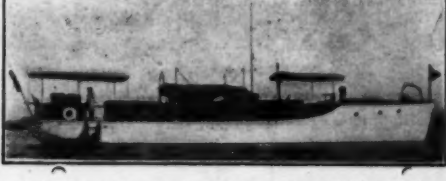
8500—Exceptionally able 65 foot Cruiser Launched 1916. Speed 12 miles. Immediate delivery. Stanley M. Seaman, 220 Broadway, New York.



8660—Latest type 60 foot Cruiser, practically new. 2 double staterooms. Stanley M. Seaman, 220 Broadway, New York.



8659—High grade 60 foot Coast Cruiser. Very able sea boat. Stanley M. Seaman, 220 Broadway, New York.



8379—For Sale or Charter—Very fine 60 foot Cruiser. Handsome interior. In commission New York. Immediate delivery. Stanley M. Seaman, 220 Broadway, New York.



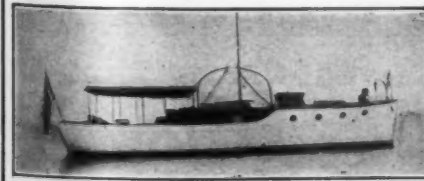
8645—56 foot Seagoing Cruiser. Unusually heavily constructed. Bath room. Perfect condition. Stanley M. Seaman, 220 Broadway, New York.



8646—One of the ablest 55 footers available. Cruised Atlantic coast extensively. Low price. Stanley M. Seaman, 220 Broadway, New York.



8151—Seagoing 52 foot Cruiser. Handsome interior. Fine accommodations. In commission. Stanley M. Seaman, 220 Broadway, New York.



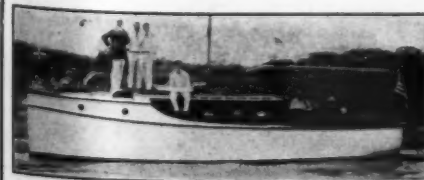
8603—Very able 42 foot cruiser. Practically new. 2 staterooms. Bargain. Stanley M. Seaman, 220 Broadway, New York.



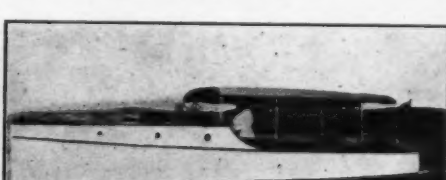
8635—42 ft. Bridge Deck Cruiser. New 1914. Stateroom. Standard engine. Very able sea boat. Stanley M. Seaman, 220 Broadway, New York.



8631—36 foot Cruiser with stateroom and saloon. 30 h.p. engine; speed 12 miles. In commission. Bargain. Stanley M. Seaman, 220 Broadway, New York.



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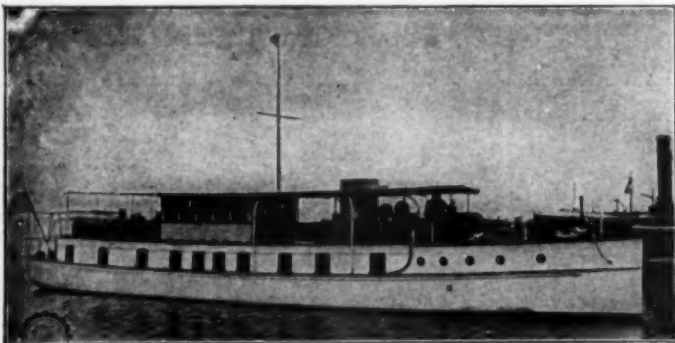
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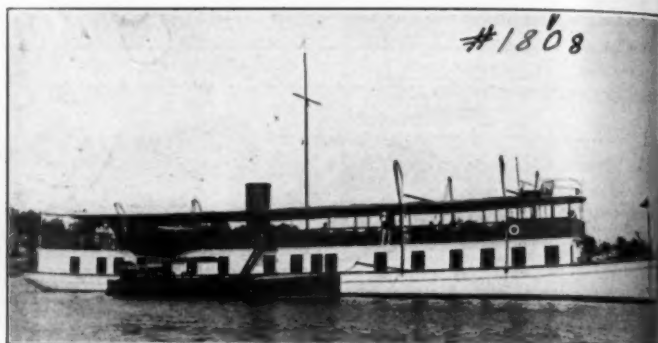
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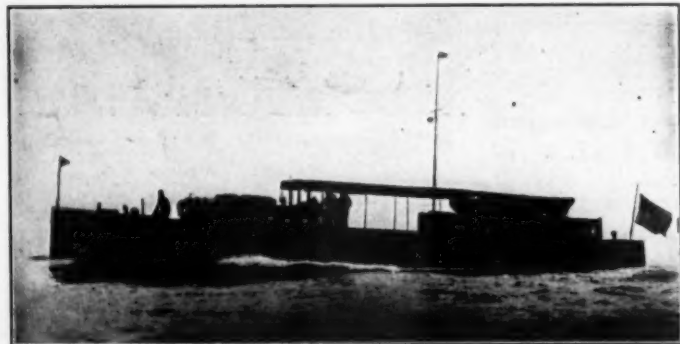
Offer for sale the following yachts, a number of which are available for charter



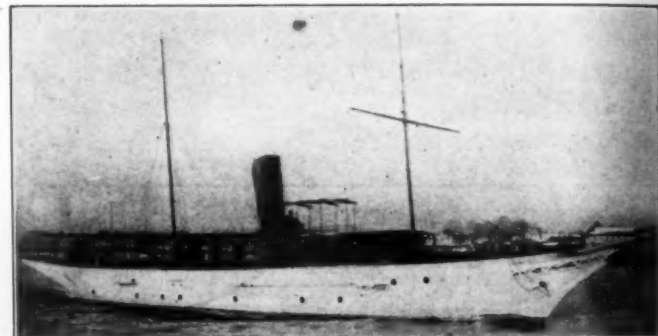
No. 1871—Sale—Charter—Modern motor houseboat. 95 ft. x 19 ft. x 3.3 draft. 4 staterooms, dining saloon, social hall, etc.



No. 1808—Sale—Charter—Twin Screw Houseboat, admirably suited for Southern waters, 125 ft. x 17 ft. 8 in. x 3 ft. 4 in. draft. 4 large staterooms, 2 bathrooms, saloon, etc.



No. 7099—For Sale—Most desirable twin screw day cruiser available, 67 ft. 10 in. x 12 ft. x 3 ft. 9 in. draft. Designed by us; built 1911. Two 20th Century motors. Speed up to 14 miles. Very large cockpit.



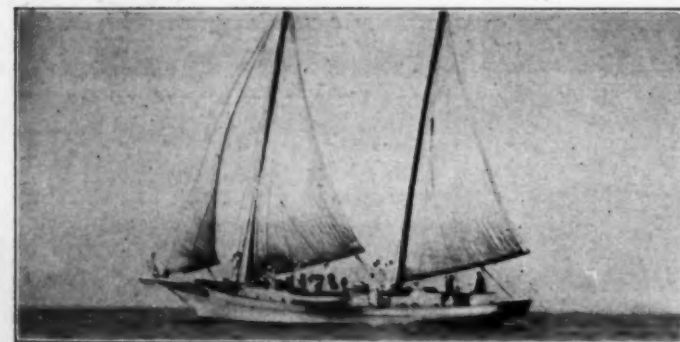
No. 7987—Sale—Charter—106 ft. cruising motor yacht; speed 13 knots; 4 staterooms, bathroom, main saloon, deck dining saloon, etc. Full equipment.



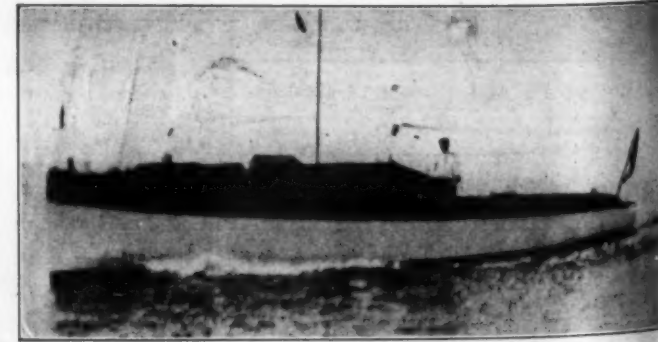
No. 7186—For Sale—Price attractive. Modern 90-foot fast cruising motor yacht, 300 H.P. Standard motor, speed up to 18 miles. Two single staterooms and two saloons. In excellent condition throughout.



No. 7996—For Charter—98 ft. desirable raised deck cruiser. Two 100 H.P. Standard motors; speed 14/16 miles. Three large staterooms, maid's room, two bathrooms and deck dining saloon, etc.



No. 1023—For Sale—Auxiliary Duggee yacht, 82 ft. x 20 ft. 6 in. x 5 ft. 6 in. draught. 60 H.P. motor new 1916. 4 staterooms, bathroom, saloon, etc.



No. 7849—For Sale—At a reasonable price—Raised deck cruiser, 37 ft. x 8 ft. x 2 ft. 4 in. draft. 24 H.P. Standard motor. Excellent saloon, toilet room and galley. Large cockpit; good seaboat. Has always had the best of care. Full particulars from Tams, Lemoine & Crane, 52 Pine Street, New York.

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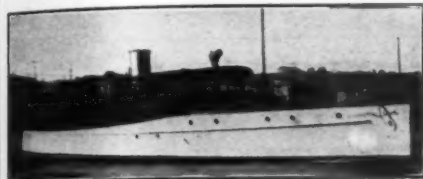
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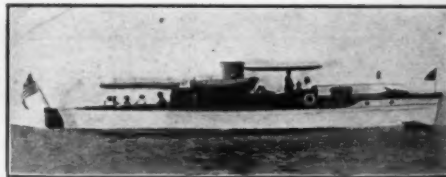
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No. 5489—SALE—Twin screw express cruiser. Good seaworthy craft 72 feet long. Speedway motors, suitable for patrol work.



No. 5655—For Sale—New 1916—53 foot fast raised deck cruiser. Wisconsin motor, electric starter.



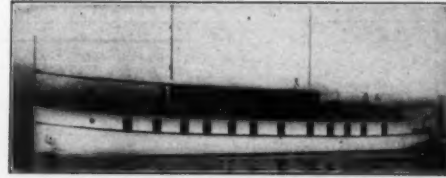
No. 3182—SALE—60 foot twin screw express yacht. Speed up to 22 miles. Sterling motors. Good accommodations.



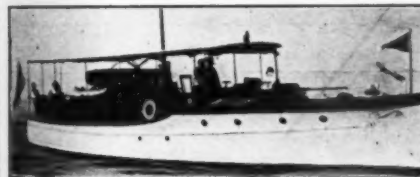
No. 4552—SALE—Attractive and seaworthy 62 foot bridge deck motor yacht. Would make good boat in Coast Defense Service. Worth investigating.



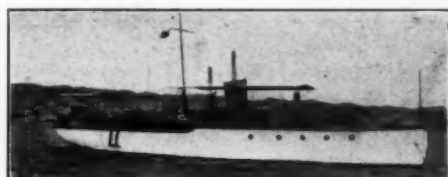
No. 5525—SALE—72 foot twin screw V-bottom express cruiser, 1916. In very good condition. Now in commission; deck strengthened for mounting of guns.



No. 5006—For Charter—Ideal 100 foot twin screw power house boat; seven staterooms, three bathrooms, large deck house.



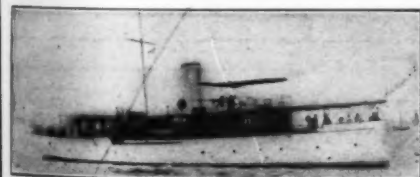
No. 5185—SALE—55 foot bridge deck cruiser, especially adapted for patrol service in southern waters. Very heavily built.



No. 4391—SALE—65 foot bridge deck motor yacht. Can be used successfully in patrol squadron. Price reasonable.



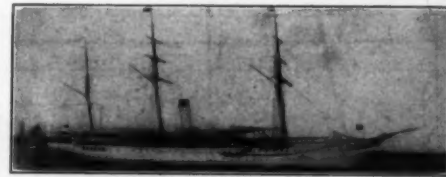
No. 2958—SALE—120 foot twin screw steam yacht. In fine condition. Speed up to 24 miles. Good condition.



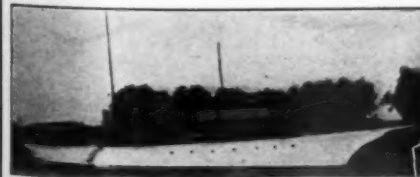
No. 14—For Charter—Well appointed 114 foot steam yacht; four staterooms, two bathrooms, deck dining saloon and social hall.



No. 2362—SALE—106 foot steam yacht. Heavily built and good boat for Coast Patrol Work.



No. 3221—For Sale—Good proposition—282 foot steel ocean going steam yacht, heavily built; can be converted to a commercial vessel.



No. 3834—SALE—135 foot steam yacht. Inspected and passed favorably upon by naval inspectors. Can be enrolled in Squadron Patrol. Reasonable.



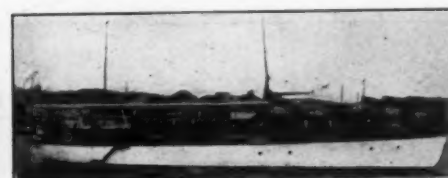
No. 5523—Sale—New 1916 motor yacht—66 foot—Standard motor—heavily built. Can be used in section patrol work.



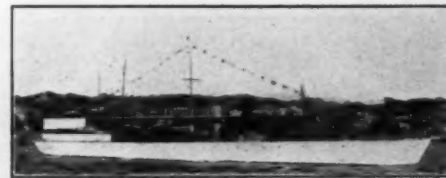
No. 5829—SALE—Attractive and seaworthy 65 foot motor yacht, Twentieth Century build. Fine condition.



No. 4689—SALE—Roomy and seaworthy 77 foot motor yacht—twin screw—sleeps fifteen.



No. 3957—SALE—75 foot motor yacht. Fine seaboot. Standard motors. Adapted for Patrol Work.



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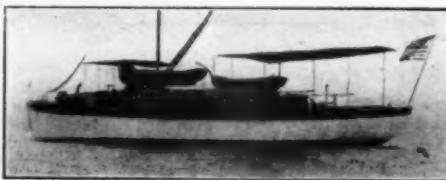
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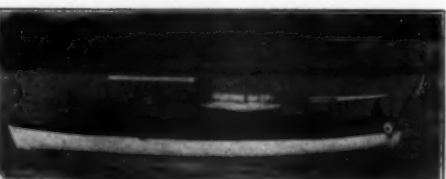
No. 1919—Attractive Power Cruiser, 60 x 12.6, fifty H.P. motor.



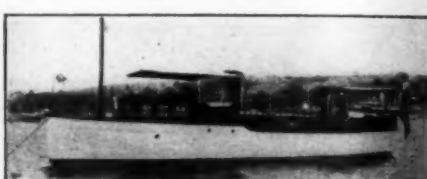
No. 948—Power Yacht, 91 x 12.6, two 125 H.P. motors. Low price if placed in Government Service.



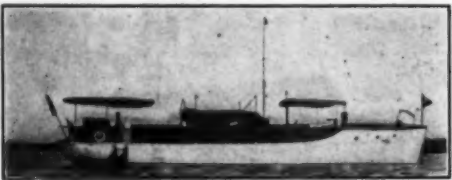
No. 1960—Desirable cruiser, 65 x 12 best condition; complete outfit; 60-80 H.P. motor; price reasonable.



No. 1252—Sale or Charter—65 x 16, two 40 H.P. motors, good accommodations.



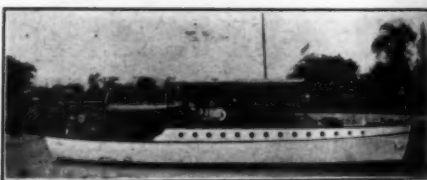
No. 1853—Able Cruiser, 55 x 12, deck control, new 6 cylinder Van Blerck motor.



No. 2072—In commission, Sale or Charter, attractive cruiser, 60 x 12.6, splendid motor and accommodation.



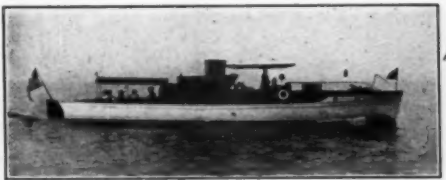
No. 1800—Handsome twin screw cruiser, 68 x 13.6. Standard motors, engine controls on deck.



No. 1614—Raised Deck Cruiser, 57 x 13, Twentieth Century motor, large accommodation.



No. 1121—Raised Deck Cruiser, 60 x 12, forty horse-power motor, low figure.



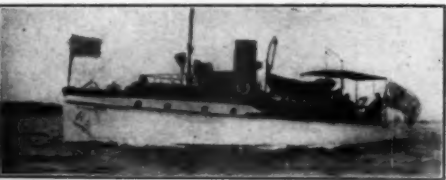
No. 1625—Twin Screw 60 ft. motor, two new six-cylinder Sterling; speed 15 miles.



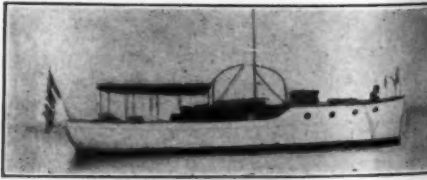
No. 1927—Modern Cruiser, delivered in commission, 55 x 13, recent build; Twentieth Century motor.



No. 1858—Raised Deck Cruiser, 65 x 12.6, Standard motor. Speed 12 miles, large accommodations. Charter considered.



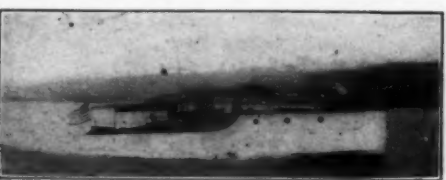
No. 2076—Able Cruiser, 50 x 10.6, 4 cylinder motor. Price attractive.



No. 2321—Roomy Cruiser, 42 x 11.6, practically new, fully equipped; 4 cylinder motor.



No. 173—Sale—Charter—Power Houseboat 66 x 16, two first class motors, good condition.



No. 2121—For Sale for Patrol Service, 50 x 10.3, speed 20 miles, built 1915, 8 cylinder Van Blerck motor.



No. 1267—Cabin Cruiser, 32 x 11, Elco Company build. Standard motor, attractive price.

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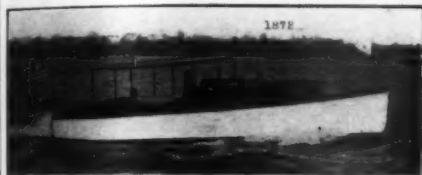
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New York City

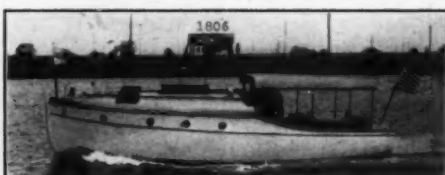
Surveying
Marine Insurance

Our list comprises all the available yachts for sale and charter. Below are a few of our offerings. If none of these appeal to you, write us your requirements. Our knowledge of the yachts we offer, and our 25 years' experience in the business, insure satisfaction to any one buying or chartering a yacht through this office.

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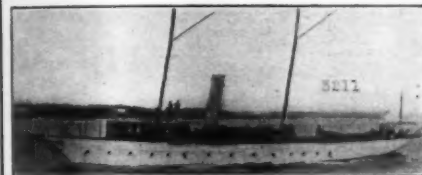
1872—32 foot Elco Cruisette. 18 H.P. Lamb Motor. Speed 10 miles.



1806—30 foot cruiser. Two berths in cabin; Sterling Motor. Speed 12 miles.



3555—For Charter—90 foot twin screw steam yacht. Double stateroom, four berths in main saloon, bath, dining saloon, etc.



3211—Sale or Charter—130 foot steam yacht. Two double staterooms, four berths in main saloon, bath, dining saloon, etc. Speed 12-15 knots.



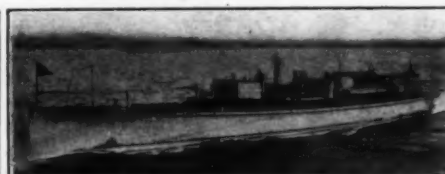
1042—70 foot power cruiser. Two staterooms. Two berths in saloon, etc., two toilets. Speed 15 miles.



894—40 foot cruiser. Sleeps four people.



4094—80 foot auxiliary yawl. Two staterooms, two berths in saloon. Sterling Motor. Speed 8 miles.



1798—90 foot twin screw express. Speed up to 30 miles.



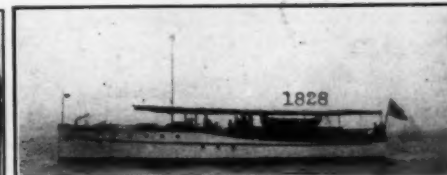
1849—60 foot cruiser. Two double staterooms, two berths in saloon, etc. Speed 12 miles.



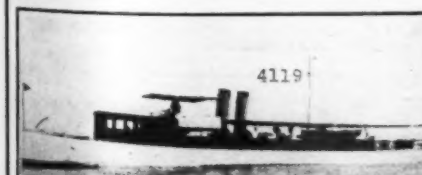
1803—67 foot cruiser. Three staterooms, bath, etc. Speed 14 miles.



1835—72 foot twin screw express cruiser. Two double staterooms, saloon, bath, etc. Speed 18-20 miles.



1828—70 foot cruiser. Recent build. Splendid proposition.



4119—Sale or Charter—120 foot express steam yacht. Speed 20 miles.



3064—80 foot auxiliary schooner. Two staterooms, large saloon, bath, etc.



4022—95 foot auxiliary schooner. Three staterooms, large saloon, bath, etc.



1773—75 foot twin screw power yacht. Three staterooms, main saloon, dining saloon, bath, etc.



3640—For Charter—100 foot steam houseboat. Six 17'; draft 5' 6". Splendid sea boat. Bargain for quick sale.



3082—Twin screw passenger steamer. Length 99'; beam 17'; draft 5' 6". Splendid sea boat. Bargain for quick sale.

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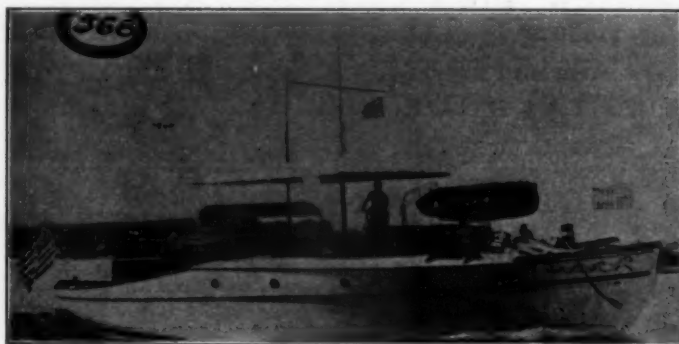
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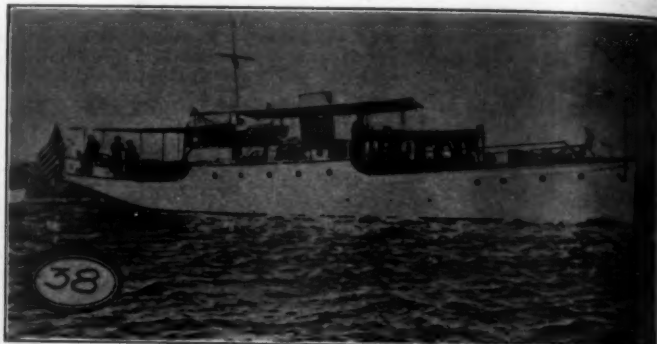
Tel. Harrison 1344

80 E. JACKSON BOULEVARD, CHICAGO, ILL.

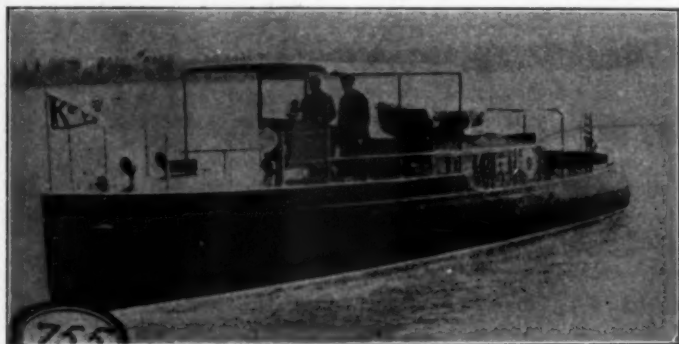
WE OFFER FOR SALE AND CHARTER the most desirable boats of all types on the Great Lakes and Coasts. Plans, photographs and full particulars furnished upon request.



No. 566—For Sale—55 ft. twin screw motor yacht. Double stateroom. Large main saloon. Two motors.



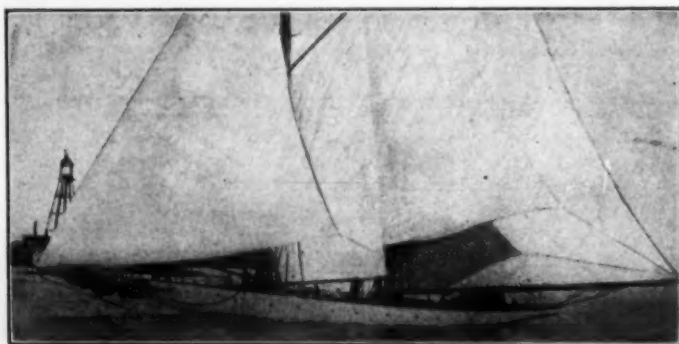
No. 38—For Sale—Exceptionally attractive 79 ft. power cruiser. Built in best possible manner in 1913. Winton engine. Large cruising radius. Speed 14 to 15 miles.



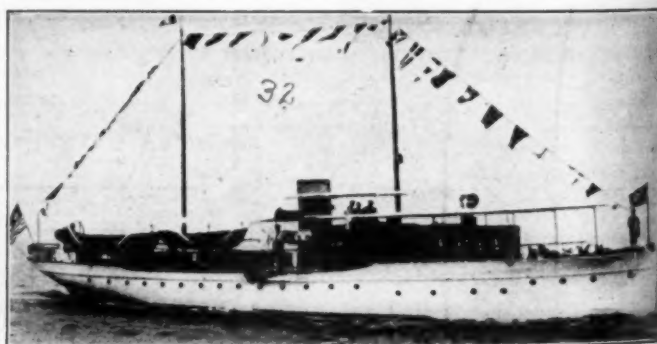
No. 755—For Sale—50 ft. fast express cruiser. Suitable for patrol boat. Best construction. VanBlerck motors. Speed 20 miles. Inspectable Great Lakes.



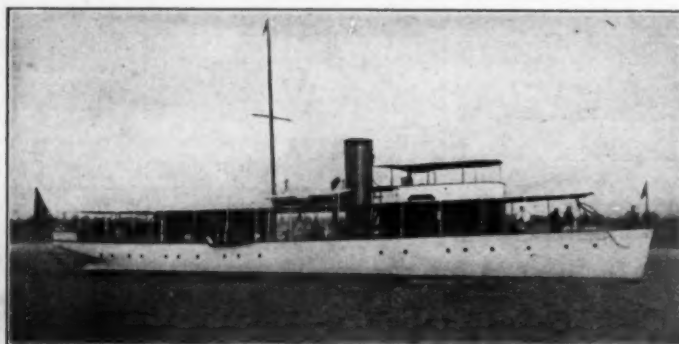
No. 679—For Sale—Very desirable steel steam yacht. 180' x 23' 7" x 9'. Recent build. Every modern convenience. 8 staterooms, 3 baths, etc. Dining and social hall on deck.



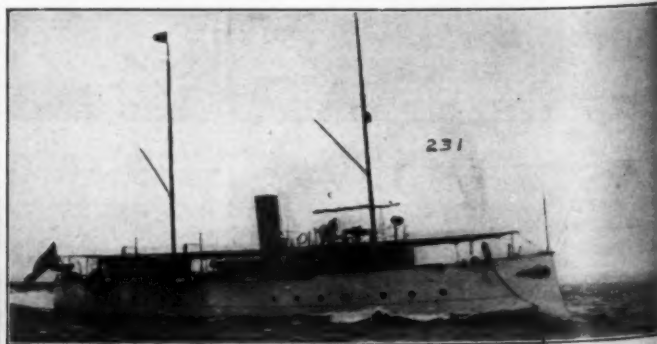
No. 71—For Sale—Bargain—99 ft. auxiliary schooner. Splendid accommodations for cruising and fast under sail or power. Full equipment.



No. 32—For Sale—Modern 98 ft. twin screw cruising yacht. Excellent accommodations and an unusually fine sea boat. Price attractive.



No. 606—For Sale—Modern 122 ft. steel steam yacht. Splendid accommodations. Two deckhouses. Five staterooms.



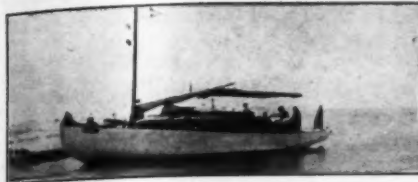
No. 231—For Sale or Charter—Very attractive steel steam yacht. 145 ft. x 18 ft. 4 in. x 9 ft. draft. Sleeps six to eight. Two bathrooms. Speed 18 to 20 miles. Superior boat; in splendid condition.

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The rate for "For Sale" and "Want" advertisements is 3 cents per word, minimum 75 cents. If an illustration is used, the charge is as follows, which includes the making of the cut:
 Cut one inch deep, one column wide..... \$2
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 Cut three inches deep, three columns wide..... \$15

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for the
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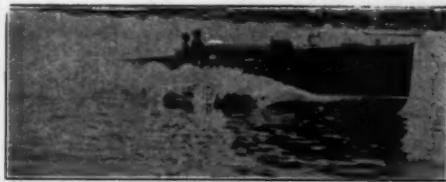


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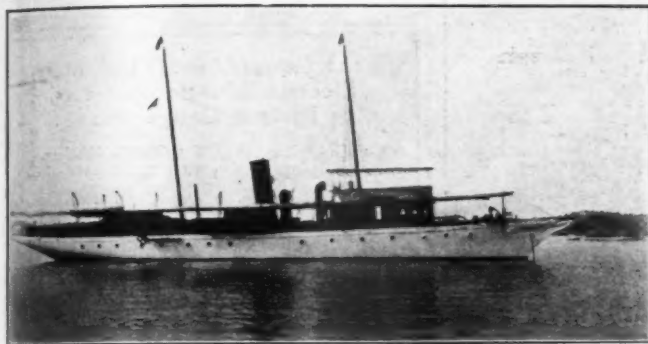
This boat is probably one of the best equipped and most comfortable craft sailing in the Great South Bay. Length 41 ft.; beam 14 ft.; draft 3 ft. Palmer Engine, 3-cylinder, 4-cyl. Absolutely all modern fixtures and improvements. Will be sold cheap. Box 6, MoToR Boating.



No. 20—31 ft. yawl \$1400, New York. No. 215—58 ft. auxiliary yawl \$5000, Massachusetts. No. 216—51 ft. yawl \$2500, New York. Free illustrated yachting list. New and second hand engines. Canadian Boat Engine Exchange, Toronto.

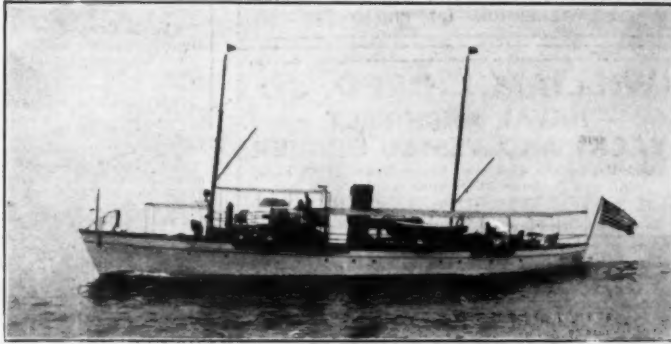


No. 3447—For Sale—New, Shoal draft, V-bottom Lawley built high speed raised deck launch; 29 ft. 9 in. long; 8 ft. beam; 15 in. draft. Speed up to 22 miles; 100/130 H.P., 6 cyl. Van Blerck motor with self starter. Cabin with transom, toilet, electric lights, etc. Mahogany finish. Apply to Cox & Stevens, 15 William Street, New York.



No. 5293—FOR SALE—Cruising Steam Yacht; excellent accommodations, good condition, best build and design, single screw, 15 miles speed. Price considerably below real value. Length 135'; beam 18'; draft 7' 2".

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No. 3191—FOR SALE—Probably the best Gasoline Yacht of her size; condition good as new; reasonable price; especially adapted for the Outside Patrol Service as well as for general yachting service. Length 96'; beam 14'; draft 4' 9"; flush deck; twin screw; new Sterling engines; 15 miles speed; Lawley build.

FRANK BOWNE JONES, Yacht Agent, 29 Broadway, N. Y.
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FOR SALE—Brand new Model U 2-cylinder, 2-cycle, 68 H.P. Gray. Reverse gear built-in. Complete outfit ready to install. Bronze propeller. This outfit brand new and perfect, never uncatered, worth \$175.00. An exceptional bargain \$120.00. Also one McFarlan and Spilker 6-inch bronze offset shaft hanger. New, never used, \$5.00. V. D. Liggett, Box 173, Tyler, Texas.

Up-to-date Motor Boat for sale in commission. Delivered under power in Lake Champlain or securely cradled on board cars at Burlington, Vermont. This boat is twenty-five feet long and is almost new. She has Sterling 50 H.P. Engine, used one short season. Speed about twenty miles. A very satisfactory outfit for a person desiring the best. Address: W. K. Strine, St. Albans Bay, Vermont.

FOR SALE—"Iris II." Fastest Canadian Hydroplane, three step design, 26 x 6 ft. Mahogany throughout, seating capacity eight. 200 H.P. 8-cylinder Sterling Racing motor. Completely equipped, launched and tested out late last fall and conceded by experts the most perfect planning hydroplane afloat. Photos, price and full particulars upon application. Thos. Enright, 260 Brunswick Ave., Toronto, Canada.

FOR SALE—Standard Motor, six-cylinder, 6 x 8, 60 H.P., perfect running order. Price—\$1300. McCoy Bros., Daytona, Fla.

PASSENGER STEAMER FOR SALE AT SARATOGA LAKE
 Licensed for 75 passengers, completely equipped. Yacht rigged, 72 ft. over all. Triple expansion engine. Everything in first class condition as certificate for this year shows. Dock, ways and slide go with it; also, all good will and assistance. Wish to retire from this business and will sell for 20 per cent of cost. Address: T. C. Luther, Mechanicville, N. Y. (R. D. No. 1)

FOR SALE—Mahogany Runabout 30 ft. x 6 ft. designed by Crouch, built by the Reliance Motor Boat Company 1915; has a 6-cylinder, 135 H.P. Sterling Motor with electric starter, speed 36 miles P. H., fully equipped, with Auto Folding Top and Cover, carries six persons comfortably. Apply to John Bossert, 1335 Grand St., Brooklyn, New York.

WANTED—Gasoline Cruiser with accommodation for four. Will trade two N. Y. City lots, one Seaside lot California Property value \$2600. Norman Baker, Muscatine, Iowa.

HOLIDAYS AFLOAT.
 For Hire—Fine 36 ft. auxiliary sloop yacht. Every comfort for party of three or five persons. Ladies or gentlemen cruising on Long Island Sound, etc. Experienced captain. Cheapest, jolliest vacation possible. \$10 per week. Engage dates. Captain Pearson, Box 47, College Point, Long Island.

DON'T SCRAP YOUR ENGINES ON ACCOUNT OF SCORED CYLINDERS OR POROUS HOLES.

We repair them by our Patented Process-fusing a silver and nickel alloy electrically without warping or enlarging the bore. Write to our nearest plant. L. Lawrence & Co., New York, 546 W. 45th St.; Detroit, 1246 E. Jefferson; Chicago, 1522 Michigan Ave.; Newark, N. J., 292 Halsey St.

FOR SALE—Simplex Marine Runabout, 90 H.P. Runs consistently 27 miles per hour. Motor in absolutely best possible condition. \$1500.00. Write for details, Room 51, 51 State Street, Albany, N. Y.

FOR SALE—Complete electric lighting outfit, comprising generator, storage batteries, switch board, etc. Suitable for cruiser or summer cottage. Excellent condition. Full particulars forwarded upon request. H. Austin, P. O. Box 259, Fall River, Mass.

SACRIFICE—PENNSYLVANIA GLOBE ENGINE.
 4-cyl., 4-cycle, 50-H.P., perfect condition, Bosch dual ignition, magnetic plugs, bronze propeller, stuffing-box, stern bearing, shaft, carburetor, exhaust muffler, everything complete and ready to install, had very little service. Price complete \$1,475. Outfit and ignition system cost \$2,430. New Orleans Import Co., 417 Natchez St., New Orleans, La.

New Tobin bronze shafting 1 1/4-inch diameter in lengths of 4, 5, 6, 10 1/2 and 11 feet at \$2.50 per foot for immediate delivery. Kermath Manufacturing Company, Detroit, Mich.

FOR SALE—Immediate delivery from New York City—One "Wisconsin" 4-cylinder, 4-cycle, type "AM" 4 1/2 x 5 1/2 motor with Paragon reverse gear, Bosch magneto, Leece Neville starting-lighting system complete. Absolutely new. Just received from shop. "L" care of MoToR Boating.

Gray 6 H.P. two-cycle, single cylinder, in good condition. Holley marine carburetor. Muffler. \$38.00 f.o.b. Peru, Ill. F. C. E. Schneider.

FOR SALE—A 22 pitch x 13, "Hyde Turbine Type" bronze propeller, used one season, in A-1 condition. Write R. E. Gish, 603 E. Cottage Ave., Abilene, Kansas.

WANTED—To purchase two-cylinder, 6 H.P. Detroit engine, second-hand, if in good condition. John E. Woodward, 602 Macheca Building, New Orleans, La.

FOR SALE—New at bargain prices 1 Paragon B Speed reverse gear, capacity up to 150 H.P. 2 Ball bearing forward gears superior quality. 2 Johnson roller bearing universal joints to 150 H.P. Johnson Bros. Co., Terre Haute, Ind.

FOR SALE—Handsome 30-foot semi-speed runabout, practically new, mahogany finish; a real boat for rough weather; 4-cycle 4-cylinder Van Blerck engine, 40-50 H.P., Bosch dual, speed 21 miles, built by Kretzer Boat Co., New York. Charles T. Lamb, 91 Reid Avenue, Brooklyn, N. Y.

CANADIANS, Second-hand engine bargains. Send for list. GUARANTEE MOTOR COMPANY 73 Bay Street, North Hamilton, Ont., Canada

USE "SNAPPER" ENGINES for your small boat. They are a big little engine built by The Automatic Machine Co., Bridgeport, Conn.

POWER TO FIT EVERY DEMAND—4-cyl. PITTSBURGH MODEL 734 bore 10" stroke four-cycle heavy duty governor controlled engine, good as new, only \$485. Cost \$1500. Will turn 3-blade 36" wheel. Develops 60 H.P. at 400 rev. Have on sale a very large line of single, double, four, six and eight-cyl. engine values in all the most desirable sizes of the best high grade standard makes. We have what you need at the right price. State your power requirements and let us quote before you buy. Magnets, carburetors and parts of every nature and very low prices. Badger Motor Company, 215 North Ave., Milwaukee, Wis.

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1 1/2 " Detroit	1 "	25.00
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12 " Ferman	2 "	65.00
8 " Ferro	2 "	85.00
14 " Dunn	2 "	45.00
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18-20 " Michael	4 "	250.00
60-90 " Eldridge	6 "	200.00
60 " Palmer Singer	4 "	175.00
45-60 " Rutenber	6 "	250.00
20-25 " U. S.	4 "	100.00
30-40 " Buda	4 "	165.00
35 " Cadillac	4 "	125.00
8-10 " Monarch	2 "	60.00
22-30 " Continental	4 "	160.00
14 " Burgess	2 "	130.00

and many others.
 Mufflers, reversing gears, magnets, universal joints, propellers, carburetors, and accessories of every description.
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A few medium and high speed four and six cylinder, four cycle motors, new or rebuilt. Reliance Motor Boat Co., 207th St., Harlem River West, N. Y. City.

Mobile, Ala., is an ideal location for building of power boats. Midway of the Gulf Coast, cheap timber, near the Birmingham steel mills. Big demand for power boats all along the Gulf, Cuba, West Indies and Central America. Direct steamers to said countries. Mobile Light and Railroad Co.

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Whistle Blower Outfits	Rotary Hand Bilge Pumps
Blower runs by friction contact with engine fly-wheel. Whistle of brass, nickel-plated.	All bronze composition. Suction lift 6 to 20 feet. A lifelong convenience.
Made in 3 sizes.	Made in 3 sizes.
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The most successful companies in the marine field are regular advertisers in MoToR Boating. If you have anything which boat owners want, or ought to want, a campaign of advertising in MoToR Boating will help you sell it. Write for rates.

Changes in Aids to Navigation

(Continued from page 34)

Kents Point Light to be discontinued and Kents Point Beacon, a white pile surmounted by barrel, to be established in its place.
Maintained by the Virginia Fisheries (Inc.).

NORTH CAROLINA

Seacoast—Cape Lookout Shoals Lightvessel—Characteristic of fog signals changed.

The steam whistle changed to sound a blast of 3 seconds duration every 30 seconds, thus: Blast 3 seconds, silent 27 seconds.

The submarine bell changed to sound a group of 2 strokes every 10 seconds.

SOUTH CAROLINA

St. Helena Sound—Marsh Island Spit Light Established, flashing white every 3 seconds, flash 0.3 second duration, of 10 candlepower, 16 feet above water on a pile structure, in 134 fathoms of water. The shelter house for the gas tanks, which forms the daymark, is painted black.

Cosaw River—Bull Spit Light, established, flashing white every 3 seconds, flash 0.3 second duration, of 10 candlepower, 16 feet above water on a pile structure, in 134 fathoms of water. The upper half of the shelter house for the gas tanks, which forms the daymark, is painted black and lower half red.

FLORIDA

Florida Keys—Survey Buoys. Two white whistling buoys and two white 1st-class can buoys with black skeleton superstructures will be moored between Rebecca Shoal Lighthouse and Dry Tortugas Light-house for several months while survey work is in progress. The buoys will be moved from time to time.

Florida Reefs, Outside—Miami Gas Buoy, 2M, established in 4 1/2 fathoms of water, about 1/4 mile 44° from Florida Reefs North End Whistling Buoy HS. The buoy is cylindrical, with pyramidal, skeleton superstructure and shows a flashing red light every 5 seconds, flash 0.5 second duration of 40 candlepower, 12 feet above water.

Key Biscayne Bay Entrance—Miami Entrance Bell Buoy, 4, established in about 3 1/4 fathoms of water at the entrance to the cut.

Florida Reefs—Carysfort Reef Light Station—Characteristic of light to be changed about October 1, 1917, to group flashing white, a group of 3 flashes every 30 seconds.

Key West Approach by Northwest Channel—Shoal Westward of Smith Shoal. The lighthouse tender Ivy reports having located a hitherto uncharted shoal about one-fourth mile long in a general east and west direction and half as wide with a least ascertained depth of 15 feet over it.

From the center of the shoal Smith Shoal Gas and Whistling Buoy, 14, bears 75 1/2° (ENE. 1/4 E. mag.), distant about 3 1/2 miles.

Position: Lat. 24° 42' 26" N.; long. 81° 58' 30" W.

Gulf Coast—Anclote Keys Light Station—Characteristic of light to be changed, about September 15, 1917. The intensity of this light will be temporarily reduced to 1,000 candlepower.

About September 15, 1917, the characteristic of the light will be changed to group flashing white, a group of 4 flashes every 30 seconds. The intensity of the light will then be restored to 54,000 candlepower.

Key West Harbor—Main Channel—Key West Entrance Gas and Whistling Buoy, PS, established in place of Key West Entrance Gas Buoy, PS. The combination buoy is cylindrical, with skeleton superstructure and shows a flashing white light every 3 seconds, flash 0.3 second duration, of 390 candlepower, 16 feet above water.

ALABAMA

Mobile Bay—Mobile Ship Channel—Correction—

Lights being rebuilt in new locations:

Mobile Ship Channel Lights, MGA, Nos. 2 and 2A, equidistant between lights MG and No. 4.

Mobile Ship Channel Lights, Nos. 4A and 6, equidistant between lights Nos. 4 and 6A.

Mobile Ship Channel Light, No. 8, midway between lights Nos. 6A and 8A.

Mobile Ship Channel Light, No. 10A, midway between lights Nos. 10 and 12.

Mobile Ship Channel Light, No. 12A, midway between lights 12 and 14.

Mobile Bay—Pass Aux Herons—Temporary fixed red lights established, 34 feet above water on red, square, pyramidal, slatted structures on piles: Pass Aux Herons Channel Lights Nos. 2 and 4.

Mobile Bay—Pass Aux Herons—Pass Aux Herons Channel Light, No. 6—Temporary light established, fixed red, 34 feet above water on red square pyramidal slatted structure on piles.

Mobile Bay—Mobile Ship Channel—Temporary lights established, each fixed red, of 50 candlepower, 34 feet above water, on red, square, pyramidal slatted structure on piles: Mobile Ship Channel Light, MG and Mobile Ship Channel Light, MGA.

Mobile Bay—Pass Aux Herons—Pass Aux Herons Channel Light, No. 8—Temporary light established, fixed red, 34 feet above water from a red, square pyramidal slatted structure on piles.

LOUISIANA

Mississippi Sound—Western Part—Shoal Spot Discovered. A Coast and Geodetic Survey party engaged on work in the vicinity reports the discovery of a shoal about 550 yards long in a general northwest and southeast direction and half as wide, with a least depth of 5 feet surrounded by from 7 to 10 feet water, which lies about 1 mile off the nearest land, westward of Grand Pass.

From the center of the shoal Merrill Shell Bank Lighthouse bears 11° (N. 1/4 E. mag.), distant 6 1/2 miles.

Gulf Coast—Calcasieu Pass—Calcasieu Range Front Light, reported destroyed, May 5, was re-established on same date, showing from two temporary posts on shore, 18 feet above water, about 50 yards northerly of former location, on same range line.

(Continued on page 52)

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AMONG THE CLUBS

Power Squadrons Open Training School

IN view of the great demand from motor boatmen and many others to acquire a thorough knowledge of all phases of motor boating, including piloting, seamanship, signaling, boat handling, power plants, first aid work, etc., as well as a knowledge of the various branches of naval work and routines, in order that they might fit themselves to be of some service to their country, the Hudson River Power Squadron of the United States Power Squadrons, Inc., has opened a nautical school at the Hudson River Yacht Club in New York City. While this organization has been holding instruction meetings several nights a week throughout the fall, winter and spring months, yet the course just started is much more complete than anything ever attempted in this country before. Classes will be held every evening except Saturday and Sunday, on which days the students will be taken out on the Squadron boats and given actual instruction in practical boat handling and navigation, as well as instruction in swimming, resuscitating, etc.

Enrolment in the Hudson River Power Squadron Nautical School is open to everyone interested, there being no restrictions or fees whatsoever. The only cost connected with the school which the student must bear is the price of a few text-books used in the classroom work. A number of competent instructors have volunteered their services and the first term, which started June 25th, will continue for ten weeks.

Classes will be held in the evening from 7:30 to 10:30 o'clock, there being two subjects of three one-hour periods each taken up every evening. A student may enroll at any time for as many subjects or courses as he desires.

The subjects and courses are as follows:

COURSE No. 1. NAVAL PRACTICES AND SHIPS.—Instructor, E. W. Marshall. General; ranks and ratings of enlisted men and officers; duties of various officers and men; pay; naval customs; salutes; daily routine; drills; duties of those on watch or lookout; uniforms and clothing; insignia of rank; things the men and officers of the various ranks should know; etc. General classes and characteristics of ships; types; care and maintenance; types and uses of boats; commands; under sail; under power; duties of boatkeepers; etc.

COURSE No. 3. SEAMANSHIP AND PILOTING.—Instructors, S. L. Baylies and C. F. Chapman. Navigation laws; whistle signals; navigation in fog; lights, buoys and aids to navigation; compass; chart; navigation instruments; steering and boat handling; Government equipment; etc.

COURSE No. 4. SIGNALING.—Instructors, A. C. Knight, F. H. Johnson, S. Brittan. Wig-wag; blinker; semaphore; radio; flags, etc.

COURSE No. 5. NAVIGATION.—Instructor, F. W. Horenburger.

COURSE No. 6.—Instructor, Commodore Wright. First aid; swimming and life-saving; use of life-buoys; resuscitation.

COURSE No. 7. DECK SEAMANSHIP.—Instructor, H. A. Jackson. Knots and splices; definition of sea terms; ground tackle; sails and spars; rigging; weather; storms.

COURSE No. 8. INTERNAL COMBUSTION ENGINES.—Instructor, L. Huxtable.

COURSE No. 9. PRACTICAL BOAT HANDLING.—Instructors, C. H. Leyton, F. H. Johnson, C. F. Chapman.

The schedule of classes each evening is as

follows (three one-hour periods per evening for each course):

MondayCourses Nos. 3 and 7
TuesdayCourses Nos. 5 and 6
WednesdayCourses Nos. 1 and 4
ThursdayCourses Nos. 3 and 4
FridayCourses Nos. 4 and 8
Saturday afternoons.....Course No. 9
Sunday morning.....Course No. 6

Enrolment in the Hudson River Power Squadron Nautical School may be made with A. C. Knight, secretary, 541 West 34th Street, New York City.

Stratford Shoal-Lloyd's Harbor Race of L. I. S. P. B. A., July 28

One of the few races which will be held on Long Island Sound this summer has been arranged for July 28 by the Long Island Sound Power-Boat Association, which is the local section of the American Power-Boat Association, and will be open to all cruisers of less than 60 feet in length, irrespective of whether they are owned by members of clubs in the A. P. B. A. or not.

The course will be from Huckleberry Island



Commodore J. W. Jump, of the Los Angeles Motor Boat Club

around Red Spar Buoy No. 2, three eighths mile south of Stratford Shoal Light (leave mark on starboard hand), leave Black Can Buoy No. 13 off Eatons Point on port hand, to finish line in Lloyd's Harbor. Distance, 50 nautical miles.

Start

Between marks anchored to the East of Huckleberry Island.

Time of Start

Warning Signal, 9:50 a. m.
Preparatory, 9:55 a. m.
Starting, 10:00 a. m.

Finish

Between new and old Lloyd's Harbor Lights.

Class

Cruisers, as defined by Rule VI, Division I, A. P. B. A. 1917 Rules, under 60 feet L. W. L.

Measurement

Rule V, 1917, A. P. B. A.

All competing boats shall be measured by the official measurer of the A. P. B. A., Frederick K. Lord, 120 Broadway, New York City, or by one of the following assistant measurers:

F. W. Horenburger, New York Motor Boat Club.

L. Huxtable, Colonial Yacht Club.

C. O. Gunther, Columbia Yacht Club.

R. M. Haddock, New Rochelle Yacht Club.

Crew

Rule II, 1917, A. P. B. A.

Names and occupations of crew shall be handed to Committee in writing at least one hour before start.

Equipment

Each boat must carry two anchors and cables, lead line, compass, charts, bucket, and be fully equipped according to 1917 A. P. B. A. Rules. Boats over 40 feet L. W. L. must also carry a suitable tender.

Power and Fuel

Explosive engine or engines operated by either gasoline, fuel oil, kerosene, alcohol or producer gas. Any ingredient to increase the power of fuel prohibited, and no extra supply may be taken on en route. (Use of sails prohibited.)

Inspection

Boats must report at N. Y. A. C. yacht house, Travers Island, before 9 a. m., on day of race for inspection.

Time Allowance

1917 A. P. B. A. Rules.

Protests

Rule XXIII, 1917, A. P. B. A.

Prizes

Starters will be divided in two Divisions, according to size, and a prize given in each for best corrected time. Larger boats will compete for the *New York Herald* American Power-Boat Association Trophy and the smaller boats for the *New York Herald* Long Island Sound Power-Boat Association Trophy.

Entertainment

On completion of race, crews of all competing yachts are invited to be present at a Clam Bake on Lloyd's Harbor Beach.

Entries

Close noon, July 25th, at which time measurement certificate must be received, and should be sent to

C. F. CHAPMAN,
Chairman Regatta Committee,
119 West 40th Street,
New York City.

Formal Opening of Rockaway Point Yacht Club

Rockaway Point Yacht Club opened the season of 1917 at their club house, Rockaway Point, Jamaica Bay, Sunday, June 10, and one of the largest crowds that ever attended a similar event at the cozy club house witnessed the ceremony of flag-raising.

Under the efficient direction of Com. E. J. H. Thieme, the club is in the most prosperous condition in its history, and judging by the number of its friends it is rapidly becoming the favorite "Port of Call" for yachtsmen in Jamaica Bay.

The afternoon and evening was pleasantly spent in dancing, and an interesting entertainment was arranged, adding to the pleasure of the day. Among the guests were several yachting parties from clubs on the Hudson River and Jamaica Bay.

Opening Day at American Model Yacht Club

The American Model Yacht Club, located at Foot of 60th St., Brooklyn, N. Y., opened the doors of its club house for the first time this season on May 30, Decoration Day. The following dates were set for the season's races: June 24, July 4, 15, and 29, August 12 and August 26, and September 3. A pleasant entertainment was enjoyed by all those who attended the opening-day exercises.

Rockaway Park Y. C. Opens Club House

The opening of the Rockaway Park Yacht Club, located at Rockaway Park, N. Y., was held on Decoration Day. A pleasant and entertaining program was arranged for the day and the secretary of the club announced to the members and their friends that the privileges of the club house and anchorage was extended to all.

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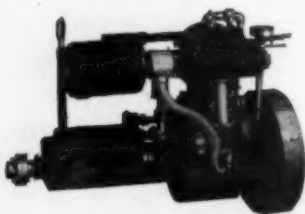
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A Regal engine can be throttled down until the wheel barely turns over. It can be operated at that speed all day long without missing an explosion. Upon opening the throttle the engine will accelerate to full speed rapidly and smoothly.



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High Class Yacht Furnishings

Sketches and estimates for furnishing of yachts in any part of the United States submitted upon request. Inquiry invited from Naval Architects as well as prospective owners.

Write for booklet
HENRY GRAY
26 Broad Street Boston, Mass.

Changes in Aids to Navigation

(Continued from page 48)

NEW YORK (GREAT LAKES)

Niagara River—Tonawanda Channel—Grand Island Range Lights established on east shore of island on axis of dredged channel.

Front light, flashing white every second, flash 0.3 second duration, 4,700 candlepower, 29 feet above water on a white pyramid skeleton steel tower.

Rear light, occulting white every 2 seconds, light 1 second, eclipse 1 second, of 4,700 candlepower, 33 feet above water, on a white square pyramidal skeleton steel tower, 515 yards 313 1/2 from preceding.

Niagara River—Tonawanda Channel—Strawberry Island Beacon, established, a white, octagonal, pyramidal wooden structure, 29 feet high, formerly Strawberry Island Lower Cut Range Front Light tower.

Lake Erie, East End—Buffalo Harbor—Lackawanna Range Front Light temporarily moved, 50 yards southeasterly along the range line.

MICHIGAN

Detroit River—Bar Point Shoal Lightvessel Station temporarily marked by Relief Lightvessel, April 29. The relieving vessel is a steamer with tubular masts with lantern, red hull with middle section white. Stack, mast and lantern black. "Relief" in black on each side. Shows a fixed white light of 480 candlepower, 40 feet above water. The fog signal is a 10-inch steam whistle, sounding a blast of 10 seconds duration every 40 seconds.

Detroit River—Wreck reported. The steamer John Plankinton, sunk in collision in Detroit River May 9, lying in about 40 feet of water, opposite the foot of Fifth St., Detroit, about 26 yards from the Canadian shore, is a menace to navigation. The pilot-house and smokestack are showing above water. Wreck is lighted at night by a white lantern on the pilot house. Vessels should keep to the American or northerly side of the wreck when passing.

Detroit River—Buoys established above the head of Belle Isle.

Boat Crossing Buoy, 2, white, 3d-class spar, in 16 feet of water on the north side of shoal above Belle Isle.

Boat Crossing Buoy, 1, white 3d-class spar, in 16 feet of water on the south side of shoal above Belle Isle.

Note.—Small boats will be required to cross channel between these buoys and the head of Belle Isle.

Lake Superior—Portage River—Changes in buoyage.

Portage River Buoy, 2A, Portage River Revetment Buoy, 3B, Edgerton Dock Buoy, 4, and Portage River Buoy, 5, discontinued.

Portage River Buoy, 2, moved 105 yards 50° and Portage River Buoy, 6, moved 130 yards 90°, to mark the easterly limits of the dredged harbor of refuge.

Lake Superior—Portage River Gas Buoy 45, re-established. The light is flashing white every 3 seconds, flash 0.3 second duration, of 30 candlepower, 8 feet above water, on a flat float with skeleton superstructure.

Lake Michigan, East Side—Richards Reef Bell Buoy, 2, established in 21 feet of water, 3d-class spar alongside, on westerly side of reef.

Lake Michigan, North End—Changes in buoyage.

New Shoal Gas Buoy, 1, moved 765 yards 0° into 24 feet of water.

New Shoal Buoy, 3, established, a 3d-class spar, in 27 feet of water, on north edge of New Shoal No. 2.

New Shoal Gas and Bell Buoy, 3, moved 1,135 yards 9° into 24 feet of water, number changed to 5 and characteristic of light changed to occulting white every 10 seconds; light 5 seconds, eclipse 5 seconds.

New Shoal Buoy, 7, established, a 3d-class spar in the former position of New Shoal Gas and Bell Buoy, 3.

Waugoshance 16-foot Shoal Buoy, 5, changed to a 3d-class spar.

Vienna Shoal Buoy, V, HS, changed to a black, 3d-class spar and numbered 7.

Grays Reef Shoal Gas Buoy, 5, GR, renumbered 9.

Middle Shoal Gas Buoy, MS, HS, discontinued.

Middle Shoal Buoy, 2, established, a 2d-class nun, in 21 feet of water, on east side shoal, about 465 yards 165°, from former position of Middle Shoal Gas Buoy, MS.

East Shoal Buoy, 9, established, a 3d-class spar, in 27 feet of water, on west side of East Shoal.

Lake Michigan—Color of lights and structures changed.

Holland (Black Lake) Range Lights. Color of structures changed to red.

Drake Point Light. Color of structure changed to red.

Saugatuck South Pierhead Light. Color of structure changed to red.

St. Joseph Pierhead Range Front Light, changed to fixed white of 30 candlepower.

St. Joseph Pierhead Range Rear Light, changed to fixed white of 1,700 candlepower.

Calumet Breakwater Light. Color of tower changed to red.

Kenosha Breakwater Light, changed to flashing red of 30 candlepower. Color of structure changed to red.

Kenosha Light, changed to flashing red of 80 candlepower. Color of structure changed to red.

Sheboygan Breakwater Light. Color of structure changed to red.

Sheboygan South Pierhead Light. Color of structure changed to white.

Manitowoc South Breakwater Light, changed to flashing white of 70 candlepower. Color of structure changed to white.

Manitowoc Breakwater Light. Color of structure changed to red.

Manitowoc Pierhead Light. Color of structure changed to red.

St. Marys River—Lighted buoys established in the vicinity of Pipe Island to be maintained pending the removal of the wrecks of the steamers Mitchell and Saxonia. Each buoy is a 3d-class spar in 20 feet of water with a fixed red light of about 3 candlepower.

Lake Michigan, East Side—Charlevoix South Point Shoal Buoy, 1A, established a 3d-class spar on north end of shoal.

(Continued on page 54)

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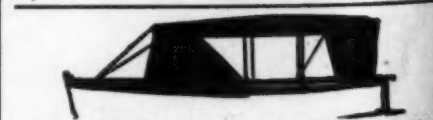
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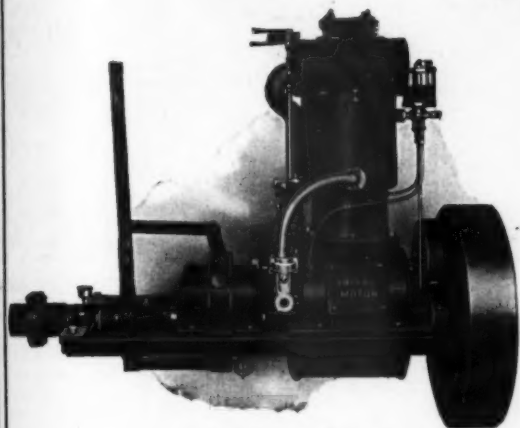
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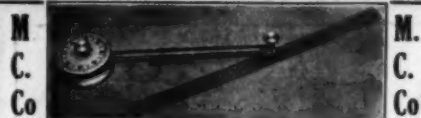
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FIGURE 1404

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x 18 x 11"
high to top of
bow; 2 1/2" cyl-
inder. For above
or below water
line.

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Price \$25.00
THE J. H. CURTISS CO. 2 South Street, New York

Changes in Aids to Navigation

(Continued from page 52)

Lake Michigan, East Side—Cat Head Point Shoal Buoy, 3, not to be established.

Lake Huron—Saginaw Bay—Charity Island Shoal Gas and Bell Buoy, 5, moved about 1,500 yards 331° from its old location.

Lake Michigan, East Side—Changes in lights and structures.
Charlevoix South Pierhead Light, color of structure changed to red.

Frankfort Pierhead Range Front Light, changed to fixed white of 200 candlepower.

Frankfort Pierhead Range Rear Light, changed to fixed white of 160 candlepower.

Frankfort South Pierhead Light, changed to flashing red of 20 candlepower and color of structure changed to red.

Manistee Pierhead Range Front Light, color of structure changed to white.

Manistee Breakwater Light, color of structure changed to red.

Muskegon Pierhead Range Rear Light, changed to fixed red of 150 candlepower.

Lake Michigan, West Side—Gravelly Island Shoal Gas and Bell Buoy, 4, established in 40 feet on westerly edge of shoal between Gravelly Island and Gull Island. Is conical with skeleton superstructure and shows an occulting red light every 20 seconds; light 10 seconds, eclipse 10 seconds of 35 candlepower.

MICHIGAN, INDIANA, ILLINOIS AND WISCONSIN

Lake Michigan—Changes in lights and structures.
Ludington North Breakwater Light. Color of structure changed to white.

Ludington South Pierhead Light. Color of structure changed to red.

Grand Haven North Pierhead Light, changed to flashing white of 70 candlepower. Color of structure changed to white.

Grand Haven Pierhead Range Rear Light, changed to fixed and flashing red, fixed light is of 150 candlepower and flash is of 300 candlepower. Color of structure changed to red.

Point Superior Light, changed to fixed white of 160 candlepower.

South Haven Pierhead Range Front Light. Color of structure changed to red.

South Haven Range Rear Light. Color of structure changed to red.

Michigan City East Pierhead Light. Color of structure changed to white.

Michigan City Breakwater Light. Color of structure changed to red.

Michigan City West Pierhead Light, changed to flashing red every 6 seconds, flash 1 second duration of 70 candlepower. Color of structure changed to red.

Chicago Breakwater South Light. Color of structure changed to red.

Chicago Pierhead Range Front Light. Color of structure changed to red.

Chicago Pierhead Range Rear Light, changed to fixed red of 100 candlepower. Color of structure changed to red.

Waukegan Harbor Light. Color of structure changed to white.

Waukegan Breakwater Light. Color of structure changed to red.

Racine Breakwater Light. Color of structure changed to red.

Sturgeon Bay Canal Pierhead Light. Color of structure changed to red.

Southeast Entrance Northeast Side, No. 1, Light, changed to fixed red of 50 candlepower.

INDIANA

Lake Michigan, South Shore—Indiana Harbor—Changes in aids to navigation made.
East Guide Piles Light and Breakwater Construction Light discontinued.

Breakwater Construction Gas Buoy, 2A, established; cylindrical, with skeleton superstructure; shows a fixed red light of 20 candlepower in 26 feet; 735 yards, 353 1/2° from Pier Construction Light; marks line of breakwater during construction and to be moved eastward as work progresses.

ILLINOIS

Lake Michigan—Chicago Harbor—Postponement—Municipal Pier No. 1 Light established in lieu of Chicago Outer Harbor Pier No. 1 Construction Light which is discontinued.

Lake Michigan, West Side—Change in color of structures. Calumet Pierhead (South Chicago) Light—Color of structure changed to red.

Port Washington Pierhead Light. Color of structure changed.

WISCONSIN

Lake Superior—Superior Bay—Changes in buoyage made.
Allouez Bay Entrance Buoy, 1, discontinued.

Allouez Bay Entrance Buoy, 1A, number changed to 1.

Green Bay, South End—Green Bay Harbor—West Bank Gas Buoy, 20, established in lieu of West Bank Buoy, 20, which was discontinued. The gas buoy is cylindrical with skeleton superstructure and shows a flashing red light every 3 seconds, flash 0.3 second duration of 20 candlepower, 8 feet above water.

Motor Boats that Fight Under Water

(Continued from page 9)

Diesel engines require about 1/2 pound of fuel per h.p. per hour at full power. The very best steam practice, using oil fired boilers, is practically 1 pound per h.p. per hour and when coal is used 1 1/2 to 2 pounds per h.p. per hour is the usual consumption. We thus see that a Diesel-driven submarine has at least twice the cruising radius of a steam submarine with same amount of fuel, and it is this remarkable low fuel consumption of the Diesel engine that has made it possible for the German submarines to keep at sea weeks at a time and even to cross to our shores and return without refueling.

As we progressed in our knowledge of Diesel engines, horsepower became larger and larger and faster boats resulted, until to-day in the fleet submarine Schley now

(Continued on page 56)



FISHING TACKLE

Deal direct with
the manufacturer

Making Fishing Tackle since 1867. This is a recommendation in itself. No diverting of energies among different kinds of merchandise—nothing but Tackle, and we have reached that high efficiency which is the result of specialization. We never sacrifice quality to make a low price but neither do we ever use quality as an excuse for a high price.

178-page Catalog sent on request.

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LIQUID VENEER

The World's Greatest
Motor Boat Polish

LOWEST PRICE BOAT IN THE WORLD

\$89 for 15-foot boat finished ready to run with either inboard or outboard motor.
Builder-Agents Wanted
\$25 for complete k.d. boat—oak frame—cypress planking. Free Catalog—100 Boats
BROOKS MFG. CO.
6307 Ship St., Saginaw, Mich.

KAYRI Waterproof Spar Varnish
For all OUTSIDE AND INSIDE work. Defies Salt Water. Guaranteed.
Brooklyn Varnish Mfg. Co., Brooklyn, N. Y.

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"THE MOTOR THAT MOTES"
Two-Cycle, Non-Backfiring Models.
Four-Cycle Heavy Duty Motors.
Kerosene or Gasoline Styles.
3 1/2 to 48 H.P.
Catalog Free

The Bridgeport Motor Co., Inc.,
112 Kosuth St. Bridgeport, Conn., U. S. A.

Kyanize

Waterproof Spar Finish White Enamel
Nothing else is "just as good"
Boston Varnish Co., Everett St., Boston, U. S. A.

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For nearly 25 years unequalled for decks and hulls because of its durability.

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BOSTON—CLEVELAND—NEW YORK

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YOU WANT THE BEST Hitchcock's Automatic Bilge Bailer

Price \$6.00 ALL DEALERS
AUTOMATIC BILGE BAILER CO.
119 St. Mary St. Brookline, Mass.

ANDERSON ENGINES are good engines

2 1/2 to 150 H. P.

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For All Types and Sizes of
Boats—Universal Struts

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RUDDER
OUTFITS
FOR



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DESIGN
V-BOTTOM
BOATS



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Made from Standard Columbian Patterns

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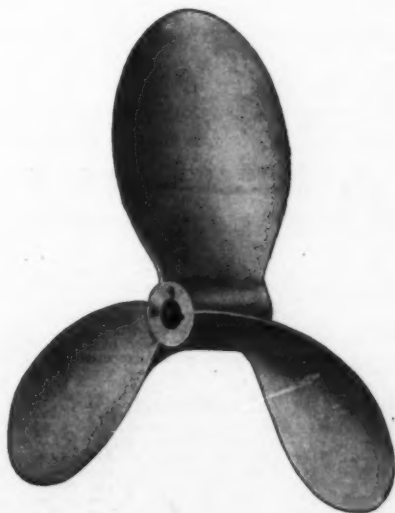
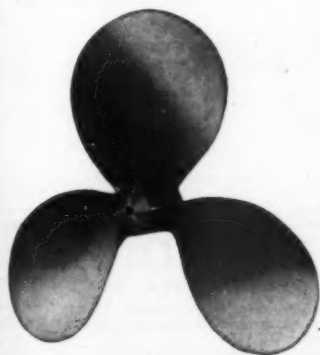
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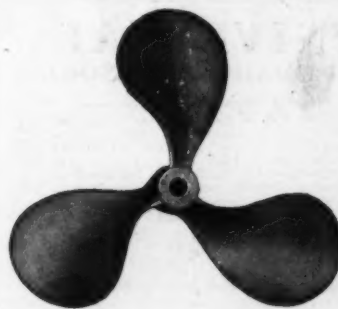
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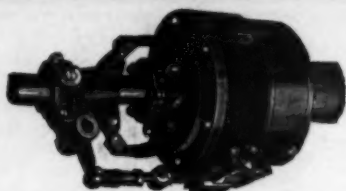
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EVERYBODY KNOWS that our Columbian patterns are accurate and right. Any propellers made from them must be accurate and efficient.





MANUFACTURED IN SIZES TO
MEET ALL REQUIREMENTS.
NAVY GEAR COMPANY
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We Build

Cruisers, House Boats, Work Boats, Passenger Boats,
Runabouts, Speed Boats, Shoal Boats, Row Boats. Also
semi-erected, knocked down and planked hulls. Write
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Approved by and bears
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New York All Large Cities



STAY-TITE

Marine Caulking Cement
Applied with putty knife, to either wet or dry wood or
metal boats. No heating.

Send 10 cents for our large illus-
trated catalog of marine hardware.

MOTOR BOAT SUPPLY CO.

1415 West 9th Street Cleveland, Ohio



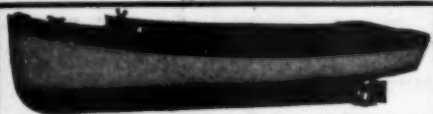
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Write for booklet, prices, etc.
PARA RUBBER PRODUCTS CO.
27 William St. New York

Get a MOHAWK

It will prove the best engine investment you ever made

S. & R. MFG. CO.

Ingersoll Ave. Schenectady, N. Y.



Moxley Boats

Favorably known for many years under the
name of Palmer Boats. Strong, seaworthy and
handsomely finished. All types up to 30 ft.,
equipped with the well-known Palmer engines.

16 ft. boat finished in mahogany with
2 1/2 H.P. Motor, \$215. Clutch, \$20 extra.
20 ft. boat finished in mahogany, 5 H.P.,
2-cylinder Palmer Motor, \$345. Clutch,
\$20 extra.

W. J. Moxley & Son Cos Cob, Conn.

UNIVERSAL HIGH GRADE ACCESSORIES

12" galv. Steering Wheels.....\$1.20
Brass Stuffing Box, 1" size.....1.00
6" Fog Bells.....1.00
Fire Extinguisher......35
Schebler Carburetor, 1 1/2".....7.55
Class 1 Equipment, consisting of Lamp, Fire
Extinguisher, Whistle and Life Preserver... 5.85
Class 2 Equipment, consisting of 4 Lamps,
Horn, Fire Extinguisher, Bell and Life
Preserver.....11.50
Class 3 Equipment, consisting of 4 Lamps,
Horn, Fire Extinguisher, Bell and Life Pre-
server.....13.50
1" Pol. Brass Flush Flag Pole Sockets, Bow
and Stern, per pair......45

UNIVERSAL MOTOR BOAT SUPPLY CO.
Atlantic Highlands New Jersey

Motor Boats that Fight Under Water

(Continued from page 54)

building, we have a boat between 250 and 300 feet long,
powered with four 1,000 h.p. engines, which will give
her a surface speed of 20 knots. Compare this with a
submarine built in 1900, whose length was 54 feet, dis-
placement 67 tons, with a gasoline engine of 50 h.p.,
driving the boat at 6 knots on the surface; and all this
change has been possible largely on account of the
Diesel engine.

It might be of interest to consider some of the par-
ticulars of the recent submarines. As already men-
tioned, submarines vary in size from the coast defense
boats of 150 to 170 feet in length and 400 to 600 tons
displacement with surface speeds of generally about
14 knots and maximum submerged speeds of 10 to 11
knots, up to large fleet submarines as represented by
the Schley.

The recent German U-boats (U 33 to 42) have the
following particulars: Length, 223 feet; displacement,
665 tons on the surface and 822 tons submerged. They
are powered with two 1,200 h.p. Diesels which give
them a surface speed of about 17 knots. They are
reported as carrying sufficient fuel to give them a radius
at reduced speed (probably 12 knots) of 6,000 miles
and the recent trip of U 53 to our coast bears this out.
Submerged they can run about 8 knots for eight hours
(64 miles) or 2 knots for seventy or eighty hours (160
miles). Thus in case of necessity they can run under
water for three days and come up some 160 miles away.

The British navy is reported to have submarines of
1,200 tons displacement, powered with two 1,200 h.p.
Diesel engines. The French have several high speed
submarines, one, the Gustave Zede is a steam vessel of
about 1,000 tons displacement driven by geared steam
turbines of 3,000 h.p. This boat is reported to have
a cruising radius of 2,300 miles. Diesel engines would
have driven this boat at the same speed for somewhat
more than twice this distance on the same amount of
fuel, but I understand, however, that at the time this
boat was built Diesel engines of sufficient power were
not available.

Modern submarines, besides having the many special
fittings necessary for a submarine, some of which have
been touched upon, are equipped with gyroscopic com-
passes, guns, wireless telegraphs, aeroplane periscopes,
clearing lines and oscillators.

The gyroscopic compass is not affected by local mag-
netism and points true north. This together with the
revolutions of the propeller, allows the submarine to
travel long distances submerged without coming up for
observations. This one piece of apparatus has been of
priceless value to the submarine in the present war.

The oscillator is a submarine signal apparatus for
sending and receiving messages through the water. By
means of it the submarine can detect the approach of a
surface boat and can generally tell the type of boat by
the number of revolutions of the propellers.

The clearing lines are for protection against nets and
run from the bow to the top of the conning tower and
from there to the stern. When periscopes are not in
use they can be housed so that they come below these
clearing lines and thus avoid all danger of fouling nets,
etc. The photograph showing the conning tower of
Deutschland shows these clearing lines very plainly.

No article on submarines would be complete without
some mention of the cargo submarine Deutschland. Pub-
lished accounts of this boat have been very con-
flicting and most of the data unreliable. There is noth-
ing remarkable about her except that she is the first
cargo submarine and made two hazardous trips across
the Atlantic; nor is she in any particular way different
from other present day submarines. Her length is
230 feet, beam 30 feet and displacement about 1,700
tons. She is powered with two Diesel engines of a
standard German design of about 600 h.p. each. Be-
yond this there is an authentic information available.

While the foregoing has briefly sketched the func-
tions and equipment of a submarine, of course it is
more or less general and many variations are found in
practice. In reality the submarine is hardly a boat at
all, but a most complicated mechanism embodying the
best productions of all branches of engineering, and
requiring a highly trained crew to handle it, offering
them few conveniences and comforts and many hard-
ships.

The Prize Contest

(Continued from page 28)

hand, the home-made switch may be designed
for any special condition, and in that way may
better perform its functions.

DATA:

Insulation over core 1/16-inch thick of fiber
or varnished cambric.

Current coil—two layers of No. 10 single
cotton-covered wire equalling fifty-six turns.

Voltage coil—1,710 turns No. 24 single cot-
ton covered wire.

LOUIS R. LEE, Columbus, O.

Yard and Shop

(Continued from page 37)

The first factory taken over by the Lawson com-
pany, and which is now being used, contains 8,000
square feet of floor space, and it has been refitted
in the most modern way for aeroplane construction
work. About 100 workmen can be accommodated in
this building, which has been styled factory No. 1,
and it is said that architects are now working on plans
for a new and larger building to be put up on adjacent
property, which when completed will contain about
five times the amount of floor space of their present
factory. This new building is expected to be in
operation within three months.

Changes in Johns-Manville Personnel

J. D. Vail, former manager of the Salt Lake City
office of the H. W. Johns-Manville Co., of New York
City, has been appointed manager of the Building
Materials Department of that company's branch at
Chicago. It is also stated that in the future the
Salt Lake City office will be under the management of
C. F. Cate, while the Great Falls, Mont., office will
be managed independently of Salt Lake City, by J. H.
Roe.

(Continued on page 8)

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Advertising Index will be found on page 38

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Carleton Generator

Especially adapted for marine
service. Fully enclosed. Rated
at 7 volts, 7 amperes. Driven
by the engine and keeps any
battery charged, furnishing cur-
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lights, whether running or at
anchor. Easily installed.

Special 12-volt, 10-am-
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erators, Automatic Cut-outs,
Amperes and Storage Bat-
teries. Write today for Bul-
letin. We specialize on low
voltage electric fans for
cabins. Attractive dealers'
propagation.

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AQUATITE

Formerly MARINITE

Is particularly recommended where quick drying
qualities are a first consideration. Dries dust free in
three to five hours. Will not turn white under water.

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Varnish Makers for 90 Years

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NEW YORK

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Motor Boat Seat

OAK-PIANO FINISH

Price \$2.75

Complete Catalog "B" motor boat supplies
mailed free.

E. J. WILLIS CO., 85 Chambers St., New York

Buy Battleship

BETSY ROSS FLAG CO.

FAMOUS FOR FLAGS

NEW BURGHE, N. Y.



HIGH SPEED MOTORS AND FLYING BOATS

From 40 to 250 Horse Power
Speed up to 70 miles per hour

USED IN ALL PARTS OF THE WORLD

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THE CURTISS AEROPLANE CO., BUFFALO, N. Y.



HYDE BOAT & ENGINE CO.

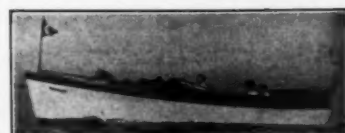
Rowing and Power Tenders.
Dories and Runabouts built to
order. Outboard and Inboard
Motors. "The Best for Power,
Pleasure and Price." Keany
Absolute Silencers. Send for
Engine catalog.

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OUR SPECIAL 25' x 5' 10" RUNABOUTS
All sizes and types built, K. D. or complete.



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RICHARDSON BOAT CO. Sweeney St., NO. TONAWANDA, N. Y.



BOATS &
ENGINES,
ALL SIZES
& TYPES
LARGE
STOCK.

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KENSINGTON ENGINES

High Quality 2 1/2-5 H.P. Low Price
Built where time and labor required to maintain a high
standard are not counted in the cost.
No manufacturer could afford to build engines as good
as Kensington are built. Limited number made each
year. Write to-day for full details.

THE MOTOR SPECIALTIES CO. Pittsburgh, Pa.

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ELECTRICITY FOR ANYONE ANYWHERE

A simple, compact electric plant for house boats,
yachts, summer cottages, grounds, docks, etc., for light
and power.

Write for the Delco-Light book.

The Domestic Engineering Company
Dayton, Ohio

The ABC of this Engine Question

Marine engines all look more or less alike.

They all operate on the same principles.

All of them will run. Most of them will give satisfactory service as long as they are not abused, and get such attention as they need.

You can't go far wrong in buying any engine that's generally regarded as a good engine.

Making the Answer Easier

Recognizing those facts, we want to put before you the reasons why we believe the Ferro engine to be the best buy:

They stand abuse. The Ferro is not only *built* for sturdiness, but also *designed* for sturdiness. Almost any Ferro owner can give you instances of how his engine has gone ahead, delivering maximum power from its fuel and not missing a stroke, when working under conditions that it could not be reasonably expected to stand.

They're dependable. Ferros are as nearly trouble-proof, we believe, as internal-combustion engines can be made. Fifteen years of marine-engine making have taught us a lot about where troubles can arise, and we have constantly perfected and refined both design and workmanship—being checked up by the performance of the thousands of Ferros in all the waters of the earth. We have tried to keep always a little ahead of the times on every detail of construction; but our big ideal has always been *trouble-proof reliability*—and we have something to show for it.

They are known. Wherever you are, there are doubtless Ferros in your home waters. Get in touch with the owners of those engines. Quiz them about Ferro power, economy, durability, dependability. You will probably discover the reason why so many Ferros are sold to people who know gas engines thoroughly and who buy on performance.

FERRO

MARINE ENGINES

FOR RELIABILITY

Fourteen models—3 4-cycle, 10 to 50 h.p.; 11 2-cycle (for gasoline or kerosene), 3 to 25 h.p. The Ferro Rowboat Motor, with float-feed carburetor (not a mixing valve) and Bosch ignition is a dependable marine power plant, small enough to be portable. Ask for information about Ferro Engines.

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"Rides the Sea Like a Duck, but Never Dives"



28 ft.
Cape Cod Dory Launch

SAFETY

Cape Cod Boats are unsurpassed in seaworthiness and reliability.

If you want a boat that is designed for real service in any sea, write for folder describing any of the following models:

17' Launch Harbor Boat 18' Varnished Tender
14' For Outboard Motor 17' Club Sailing Dory
18' Shallow Draft 24' Cabin Cruiser
12' Rowing Skiff 30' Cabin Cruiser
16' Painted Tender

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Office and Factory, WAREHAM, MASS.



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Use No. 1 Extra Quality for filling deck and hull seams of Yachts and Motor Boats.

Use No. 2 First Quality Ship Glue or No. 3 Special Navy Glue for filling deck and hull seams of merchant vessels.

Use No. 7 Soft Quality or Waterproof Liquid Glue for filling and waterproofing canvas for covering boats and canoes, cabin tops, decks, and flying boats. No canoeist should be without an Emergency Can of our Special Canoe Glue.

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Send for Free Booklet "Marine Glue: What To Use and How To Use It"

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152 Kneeland Street, Boston, Mass., U. S. A.

Ralaco Marine Engines

THE S. M. JONES COMPANY

616 Segur Avenue

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Toledo, Ohio, U. S. A.

Quiet Running

Sturdy Construction

Economical in Operation

1-10 of a Gallon of Gasoline
per H. P. Hour

10 to 75 Horse Power

2 to 6 Cylinders



30-40 H. P. Special Engine built for U. S. Govt.

Gasoline Yachts and Engines

NOTED FOR RELIABILITY

TREGURTHA WATER TUBE BOILERS

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Write for estimates on our Improved One-Man Folding Top, cushions, or furnishings made especially for your boat. "Roll-Up" Life Preservers, Kapoc filled, comply with government requirements. Catalog on request.

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War Is Declared

on the weeds, rocks, and snags that give your under water propeller so much trouble. The "Airdrive" will take your boat anywhere it floats. Practical, efficient, economical, quiet, and dependable power for shallow draft boats up to 35 feet. Thrust 85 to 100 pounds. Ask your dealer, or write us. KEMP MACHINE WORKS, 1317 So. Franklin St., Muncie, Ind.



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A better boat for your money—no matter what type you want. We build anything from a rowboat to a tow boat, for pleasure or commercial use. Stock designs for 20-ft. runabouts and 34-ft. cruisers.

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BURGER BOAT COMPANY MANITOWOC WIS.

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SAVE THEM WITH

SO-LUMINUM

This new welding compound for aluminum is stronger than aluminum—perfect substitute for castings. One-half time and cost.

Use Gasoline torch.

Trial Bar, 50 Cents \$5.00 per pound

SEND FOR BOOKLET 63

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LISTEN! See that groove controlling the oil? The

groove full of oil forms a dam. Gas cannot get down, oil cannot get up. That's why more power and no carbon.

ISN'T THAT A REASON?

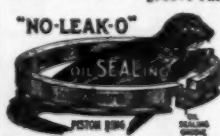
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AUTOMOBILE

ACCESSORIES CO.

Baltimore

Md.



The Great 2-Cylinder KOBAN ROWBOAT MOTOR

Absolutely free from vibration—always reliable—speedy—powerful. Exclusive features—tiller at right side, tilting attachment, non-sensitive carburetor and others. Ask for catalog.

Koban Mfg. Co., 246 So. Water St., Milwaukee, Wis.

ELECTRIC SEARCHLIGHTS

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Propeller builders for years have been trying to make a wheel that eliminates the slip. We have done this, as every square inch of the blade in this propeller has the same pitch. It is easily adjusted to any pitch so that the engine can be given proper speed. We guarantee this wheel to give satisfaction and not to slip out of pitch. Write for catalogue and prices.

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33,138 Lines Advertising

5,355 Lines **GAIN!**

Last July
This July

TOPPAN-BOATS

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TOPPAN WINNERS FOR 1917

Dory Launches—14, 16, 18, 20, 22, 24 and 30 ft. Sailing Dories—14, 16, 18 and 21 ft. V-Run-abouts—14, 16, 18, 20, 22, 24 and 30 ft. Rowing Skiffs, Swampscott Dories, Raised Deck Cruisers—22 and 30 ft. Special Outboard Motor Boats—24 and 30 ft. Special Cape Cat Sail Boats—21 and 24 ft., with or without power.

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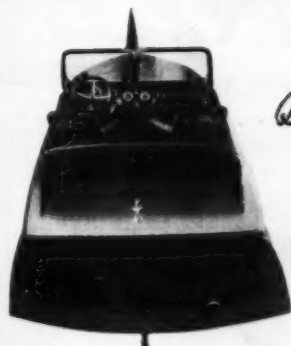


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Incorporate all the Luxury
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"QUALITY"

LARGEST MANUFACTURERS OF

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New York Chicago CINCINNATI Boston London

Gasoline Strainers

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Speed Model

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Utilitarian Model

EFFICIENCY, POWER, SPEED

AMERICAN MANGANESE BRONZE COMPANY

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WILCOX OIL COMPASS

Points true—is sensitive and accurate in any climate. Built especially to withstand the jars of power craft. Carefully tested and fully guaranteed. Sizes of dials 2, 2½, 3, 4 and 5 inch. Ask your dealer, or write us.

FREE BOOKLET—"Compass Talk and Tests," containing practical information and tables for recording deviation.



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World's Largest Marine Hardware Manufacturers



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WILCOX, CRITTENDEN
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4 S. Main St., Middletown, Conn.
Mfrs. of the Famous Maxim Motor Boat Silencer

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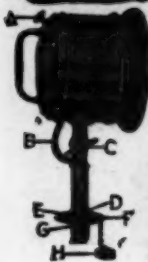
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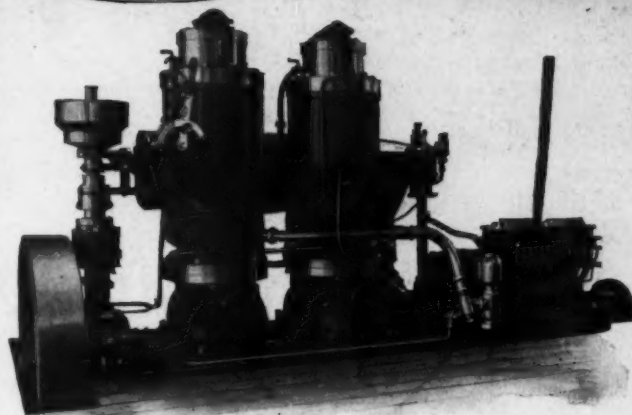
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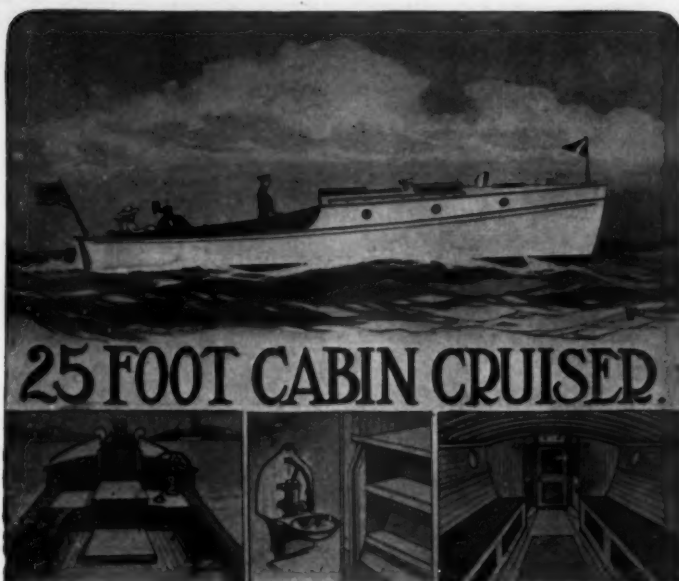


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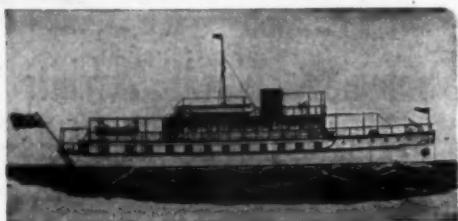
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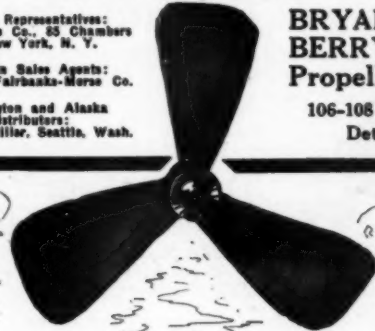
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

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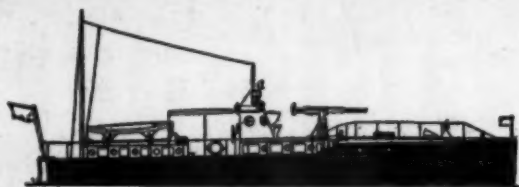
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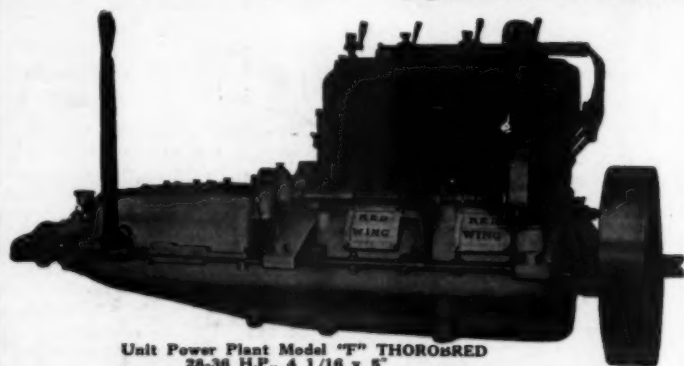


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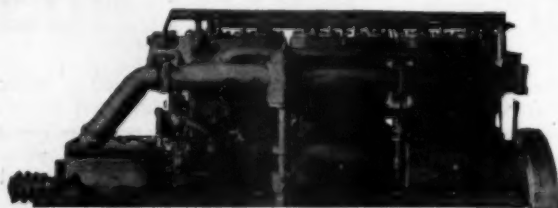
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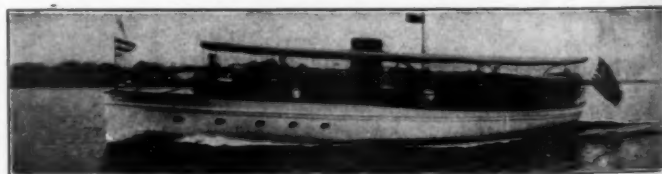
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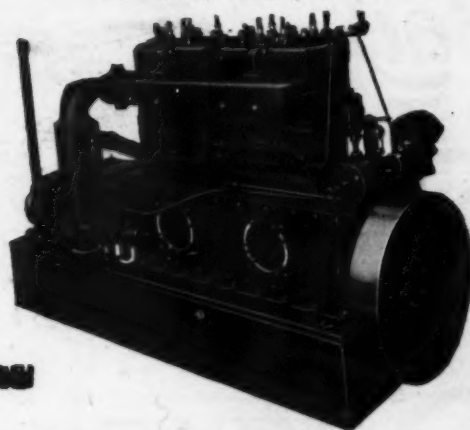
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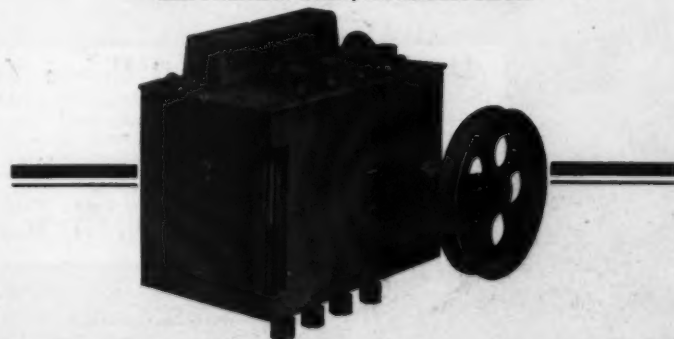
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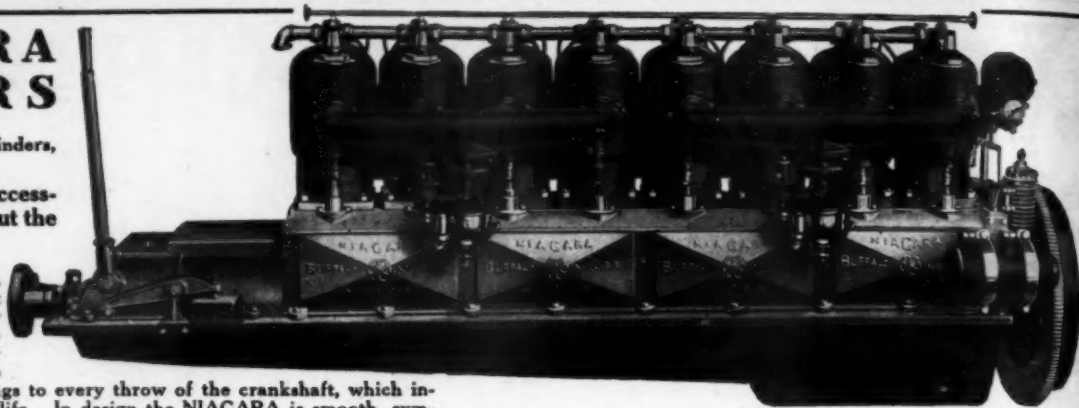
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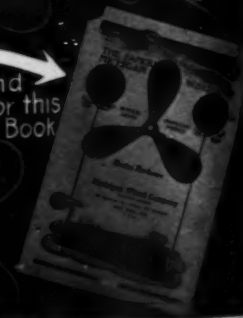
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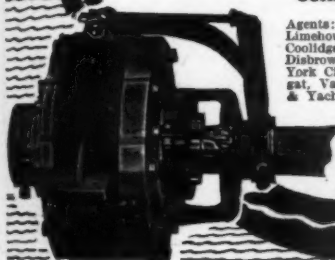
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Aviation opens up a new field of pleasure for the sportsman; for both the land and water enthusiast. The response of an airplane on water is splendid; in the air it gives pleasure and thrill, and speed never before equalled. Standard Airplanes are manufactured with great skill, and unbounded care and diligence.

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Save \$20 to \$30 in actual cash and own the best, most reliable row boat Motor built. The Columbian Row Boat Motor has fewer working parts, bronze (weedless) propeller, water jacket exhaust-silencer. No noise—no hot parts.



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ROW BOAT MOTOR

ONLY \$60

has made good on America's lakes and streams for the past five years. Order early to insure quickest delivery. Right now our delivery department is being pushed to the limit. We advise quickest action on your part. The 1917 Columbian only \$60—with high tension magneto built in fly wheel, \$70. See the Columbian also Boats, Canoes, Cruisers, Marine Engines, etc., at our big motor boat exhibit. Call or send for free literature. Write us today.

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MILLER

The Motor of Renown

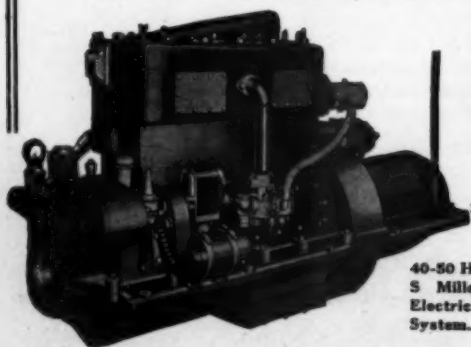
Midway between the extravagantly high-priced marine engines and the cheap built-to-sell motors stands the Miller—a thoroughly high grade power plant embodying the best of design, materials and construction at a price based on the actual cost of production.

There is not a cent wasted on unnecessary material or labor in a Miller engine. On the other hand, nothing is shaved or skimmed to cut the cost at the sacrifice of efficiency or reliability.

Every Miller Engine represents the utmost service value your engine money can buy. Eighteen popular models, medium and heavy duty types, from 4 to 65 H.P. Also one and two cylinder portable rowboat motors.

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40-50 H.P. Four Cylinder Model S Miller Motor with Bosch Electric Starting and Lighting System.

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THE REVERSE GEAR IS THE MOST IMPORTANT UNIT OF YOUR MOTOR BOAT EQUIPMENT.

Our Sales Department Has Thirty-five

THOUSAND of the BEST SALESMEN IN THE WORLD. You will find them in every state in the Union. You will have no trouble in distinguishing them for they have GIES GEAR COMPANY stamped on their backs. We expect every salesman to do his duty and want you to report any misconduct on his part. Whenever one of our salesmen is found wanting in any particular he is immediately recalled and a new one sent out in his place. This has been and always will be the policy of the GIES GEAR COMPANY.



Your outfit is no stronger than your reverse gear

No. 1	\$18.00	Model A	\$28.00	Model B	\$48.00
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The WRIGHT Engine for Your Boat

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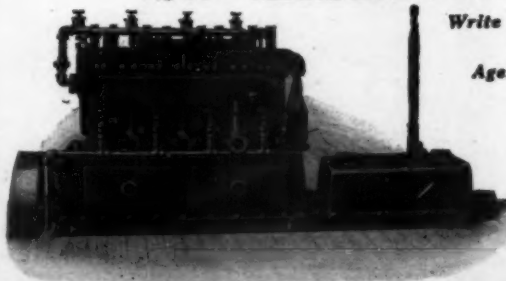
The ultimate solution of the fuel problem. Saves more than half of fuel expense, without sacrificing flexibility, power or reliability.

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Valves in cylinder heads. Make and break ignition. Bosch Low Tension Magneto

3-Cyl. 6	x 7 1/2"	22-30 H.P.
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4-Cyl. 7 1/2	x 9	45-60 H.P.
6-Cyl. 6	x 7 1/2"	45-65 H.P.
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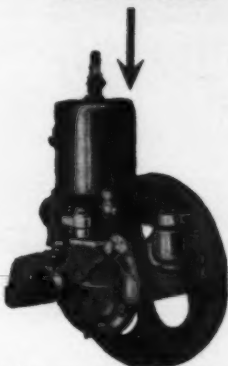
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GETTING TOGETHER A PERFECT TRIO

ARROW
2 Cyl., 4 H.P.
Detachable Rowboat
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Single
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K-1, 2 H.P.
36 lbs.

Double
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K-2, 5 H.P.
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WATERMAN
Porto
Single Cylinder, 3 H.P.
Detachable



Years of painstaking experiment by two separate companies have been brought together in one company by our outright purchase of all patents, patterns, tools, good will and titles of the Waterman Motor Company's Marine Motors.

In the models shown you will find a type exactly suited to your needs.

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The Single Cylinder, Waterman Porto, is the acme of easy "automobile" control for motor boats. You can raise or lower the friction clutch propeller lever and adjust it to a nicety for trolling quietly, full speed ahead or any intermediate speed.

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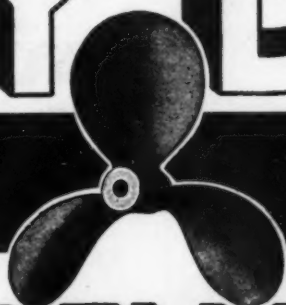
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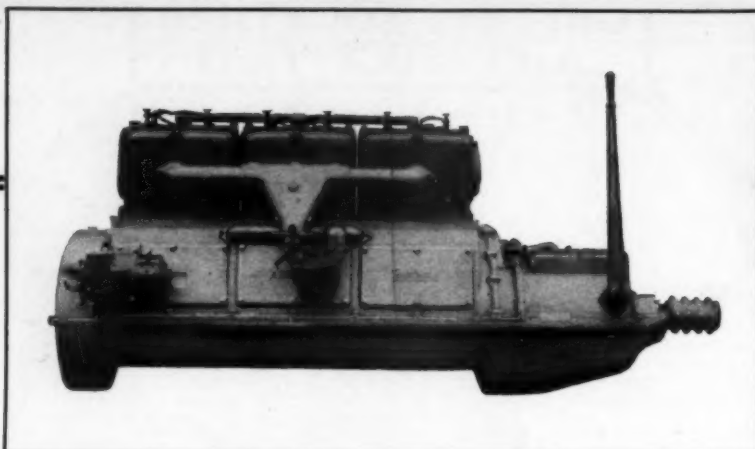
All of these boats are HYDE-equipped which is ample proof of HYDE efficiency.

If you desire maximum results from your outfit, be sure it is equipped with a Hyde Turbine Type Propeller.

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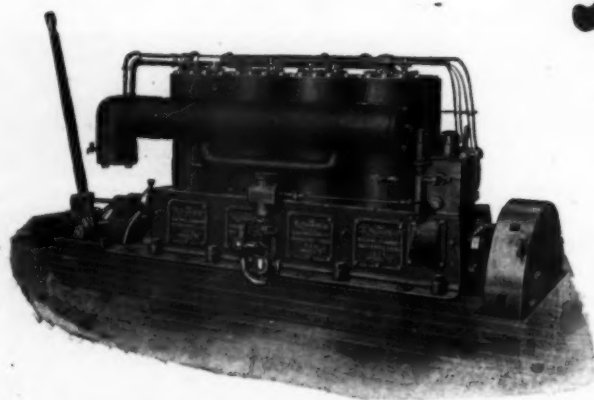
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YOU cannot afford to overlook operating cost—nor can you ignore the expense of upkeep. The accessibility of working parts is also of great importance—for it means that less time is required for inspection and adjustment.

The **Automatic** is a cruiser engine of the highest quality. It is economical to operate and maintain. It is easy to care for. It is built to give efficient service year after year.

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There are many models of the **Automatic**, from two to six cylinders, 30 to 250 H.P. Let us send you full particulars of the size you require.

THE AUTOMATIC MACHINE CO.
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Masters Marine Speedometers indicate boat speeds accurately in Miles Per Hour. The indicator is very attractive in any part of the boat you may choose to place it. Its small size (only 3 inches outside diameter) gives it a warm welcome among the fittings of the most carefully appointed launch or cruiser.

The installation of this instrument is an easy matter. From the indicator a copper tubing extends to a small outboard connection located on the hull below the water. Only an eighth inch hole is bored in the hull.

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Price at dealer's, \$8. Sent C. O. D., \$8.10. Canadian Price, \$12.

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Lakes Winnepesaukee and Sunapee

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The jolliest vacation a man could wish for—out-door sports without end, informal, cordial social life, people it is good to know.

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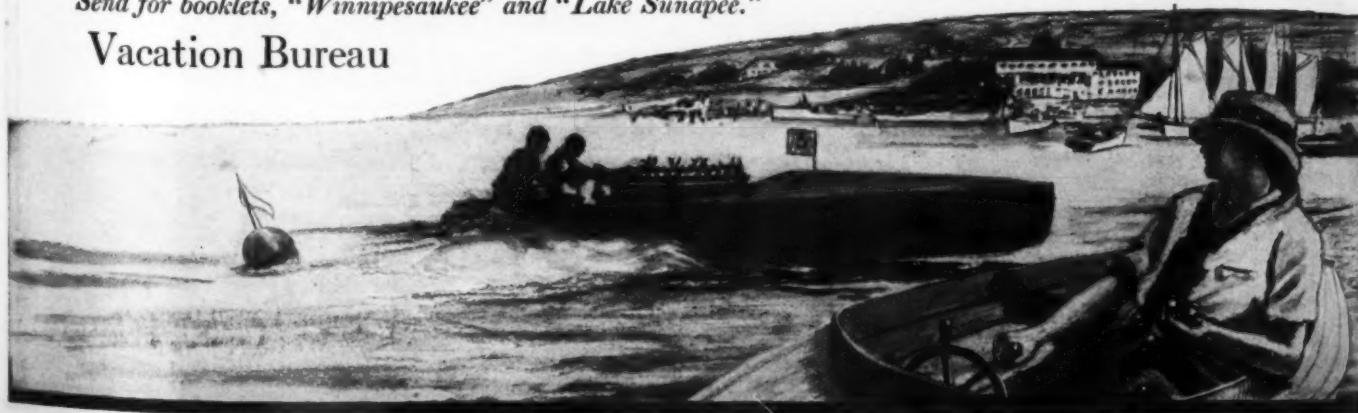
Hundreds of boats of all types, many high-powered speed boats, frequent regattas, impromptu races all the time.

All land and water sports—canoeing, sailing, fishing, bathing, golf, tennis, tramping and camping out.

Finest hotels, boarding houses, camps at moderate rates.

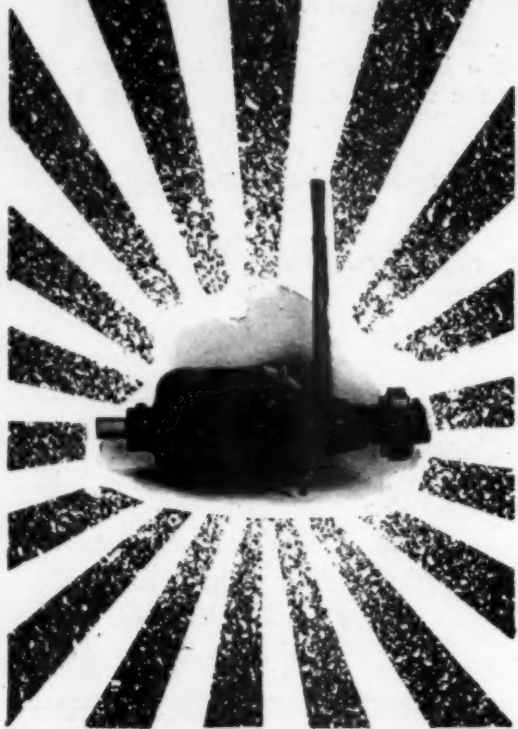
Send for booklets, "Winnepesaukee" and "Lake Sunapee."

Vacation Bureau



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Advertising Index will be found on page 38

STANDARD REVERSE GEARS



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The success of the Standard is the best proof of its quality and efficiency. Here is a reverse gear that is making good in upwards of 25,000 motor boats. It is giving such exceptional satisfaction that every owner of a Standard is an enthusiastic booster for his gear. No wonder Standard sales are jumping.

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And unless your lighting equipment is a **HENRICKS EUREKA** Outfit, you don't know what perfect lighting service you can secure at trifling first cost and practically no expense for operating.

The Henricks Eureka is the standard electric lighting system for motor boats. It is installed on hundreds of boats, including all sizes from a little launch or runabout to a 60-ft. cruiser. Outfits can be supplied to operate as many lights as may be desired.

Remember, we are electric boat lighting specialists. We have been manufacturing ignition and lighting devices for seventeen years. Let us recommend an equipment for your boat and quote prices before you buy.

Magnetos for Ignition and Lights Direct, from \$10.00 Up

Lighting Outfits, consisting of Generator and Storage Battery, \$40.00 and Up
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Write today for catalog which gives details and prices

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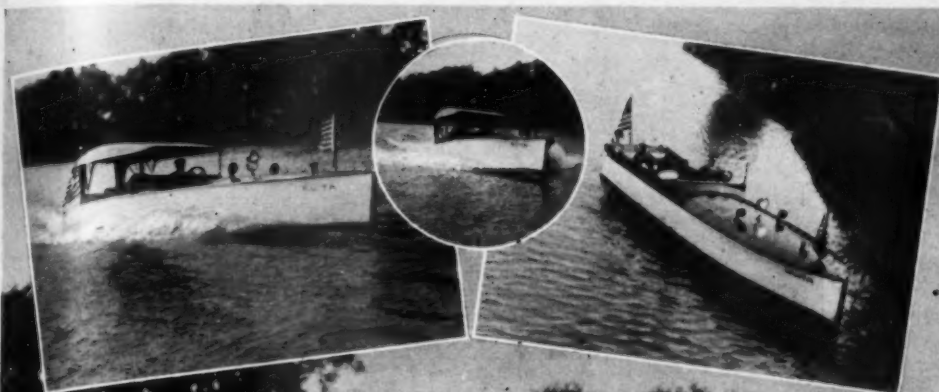
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NIAGARA

The Complete Boat



VIEWS OF THE ROCKEFELLER BOAT



Percy A. Rockefeller Selects a "Niagara"

THE "Ruita" shown in the accompanying views is a 32 ft. Niagara Runabout recently delivered to Percy A. Rockefeller of the Standard Oil Company.

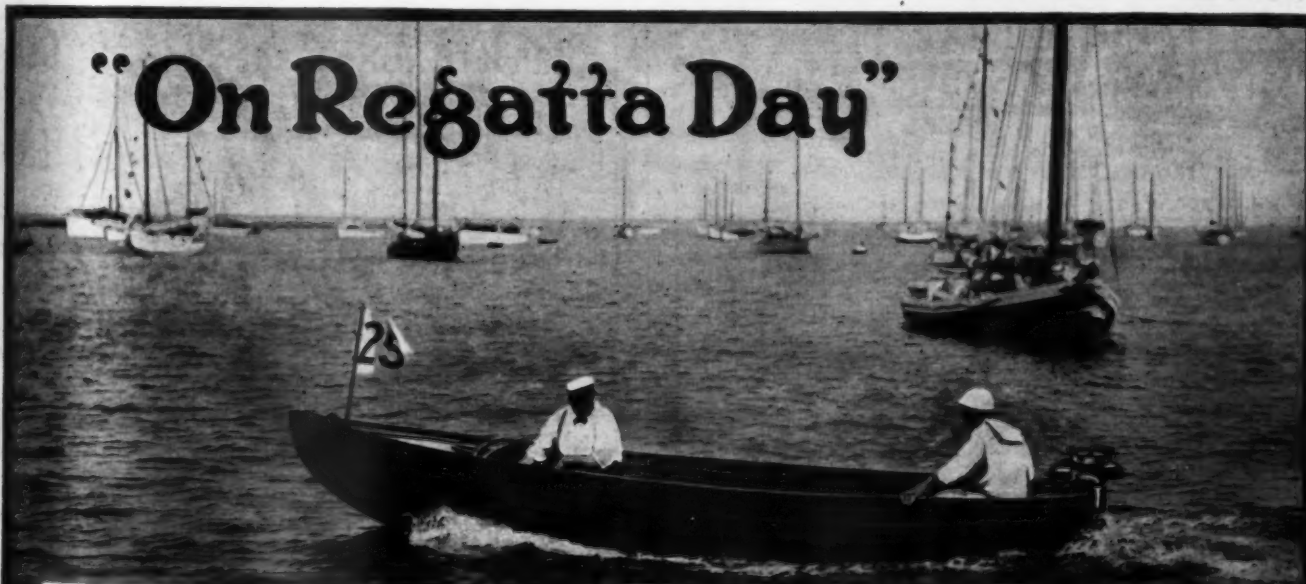
It is of the latest "V" bottom type equipped with an 80-100 H. P. Van Dierck Motor capable of making 27 miles per hour with perfect comfort and safety.

Like the cabinet work of the old masters "Niagara Runabouts" are built to last. Every refinement for comfort, pleasure and safety makes a "Niagara" the complete boat. Its grace of contour will no more pass from style than the immortal lines of Chippendale and Sheraton.

By prompt action 23, 28 and 32-ft. boats, including the latest "V" bottom type, priced at \$2500 to \$5000, may be had for immediate delivery. Write for descriptive bulletins.

Niagara Motor Boat Co.
210 Sweeney Street
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"On Regatta Day"



For running around, giving final instructions, policing the course, preventing mishaps and fouling, an Evinrude-equipped boat admirably serves the purpose. You can reverse the Evinrude instantly without stopping the motor or turn around within the length of your boat—all without taking your hand off the steer-

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Evinrude Magneto — Built-In Flywheel Type — Automatic Reverse, new 1917 refinements

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SPEED SIMPLICITY SATISFACTION



It has been proven beyond a doubt that an Aero-propeller direct connected to an engine will drive a boat faster than an under-water screw propeller. In recent demonstrations the Aerothrust bucked river currents against which experienced oarsmen could make no headway.



The Aerothrust has only five moving parts. The lubricating oil is mixed with the fuel, which eliminates the use of cams, gears and valves that so often give trouble. Both cylinders fire at the same time. Therefore it is vibrationless.



The Aerothrust owner has the satisfaction of knowing that he is free to travel through any waters regardless of weeds or shallows. Rivers and lakes heretofore considered unnavigable are now being plied by boats driven with the Aerothrust.



A LOGICAL COMBINATION

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SPEED—SIMPLICITY—SATISFACTION.

Order from your dealer or write for descriptive booklet.

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MOST PRACTICAL MOTOR BOAT SEARCHLIGHT MADE

WHITE FOR SAFETY—for navigating dark and unfamiliar channels, avoiding rocks, picking up buoys, making landings, etc. A powerful penetrating light that carries far and insures safety at night.

RED FOR DISTRESS—simply press a button and produce a brilliant red light that is as effective as red fire for a distress signal and is visible for miles.

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24" from Bulkhead to Wheel

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17" Wheel Iron
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Black enamel finish.
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25 OTHER STYLES

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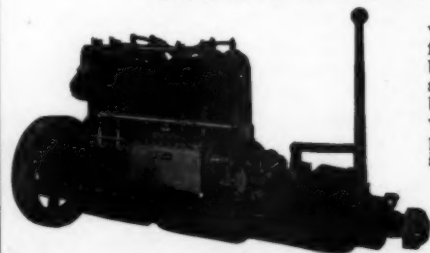
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Peerless Engines represent a greater percentage of actual value and a smaller percentage of overhead expense than any other engine.



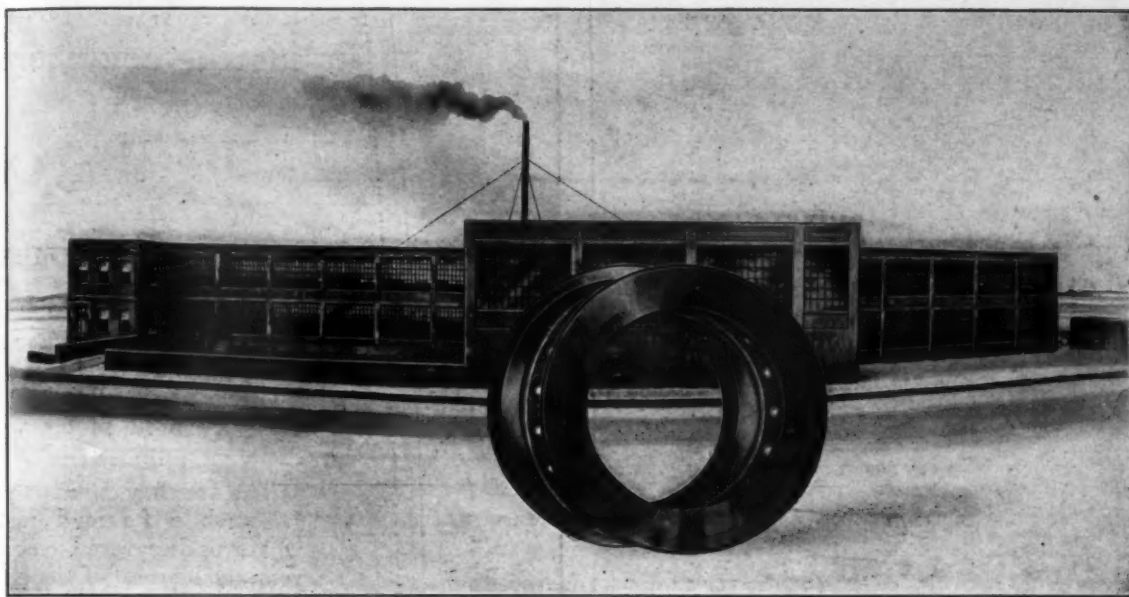
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You pay less for a Matthews Craft.

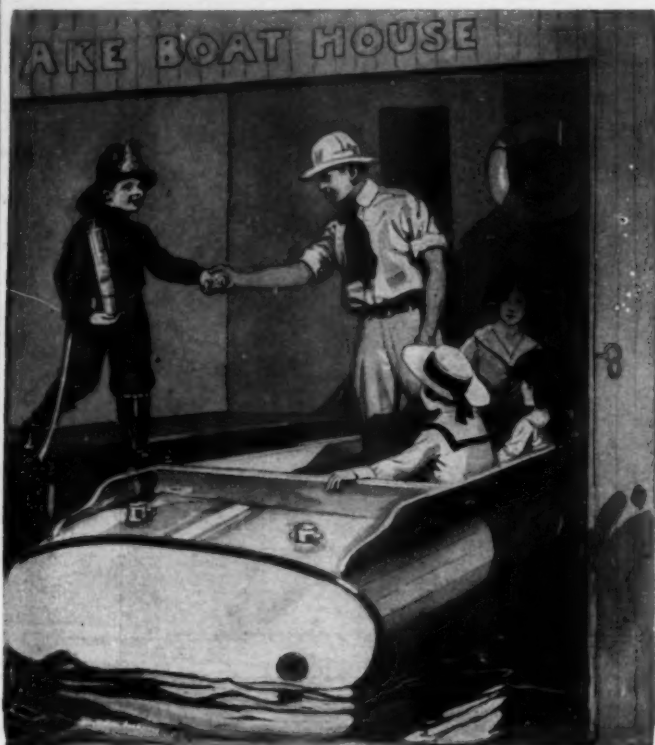
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"How can they be safe, miles out on the sound, without help near?"

"Your family and children are your life, worth their weight in gold, worth the price of a thousand Fyr-Fyters.

"Yet you imply, 'My boat will not burn,' assuming that yours of all boats will be spared.

"Take Fyr-Fyter along. Fires will happen. A bit of waste, a spark, and a few drops of gasoline is all that is necessary.

"You would be willing to lay down your life for your family, but that won't save them. Take Fyr-Fyter along and be absolutely sure of safety."

Fyr-Fyter

NEVER FAILS

Quenches fires—gasoline, oil, grease—any origin

Go to your hardware dealer, auto dealer, mill supply house, ship chandler, and ask for Fyr-Fyter.

Get a Fyr-Fyter because of its continuous stream, easy pump action and panic-proof handle.

A novice can use it—your wife or boy—first time. Each machine is tested thoroughly before, during and after assembly. Also bear in mind these exclusive features:

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The HAND of SAFETY

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agrees with great
marine engineers
on the
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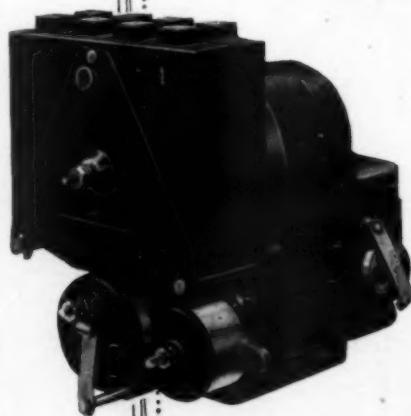
AFTER two years of almost continuous test, the Berling Magneto has won its place on the Locomobile—regarded by many as the world's most carefully built motor vehicle.

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Berling Magneto

Worth More

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None of us are immune. Even the strongest swimmer is liable to accident and women and children thoughtlessly and unknowingly run risks that only a Pulmotor can prevent from ending tragically.

Don't wait for this danger to prove itself in the loss of a friend. Start to protect yourself and your club now by writing for details and a demonstration of the

Type "B" Pulmotor

The genuine always bears the name DRAEGER

Type "B" Pulmotor is well within the reach of the

Vital Advantages of Type "B" Pulmotor

Assists in clearing the lungs of water.

Produces respirations identical with natural breathing of every patient it is used on—automatically, nothing is left to the snap judgment of an excited layman.

Signals patient's first attempt to breathe.

Guides operator in continuing treatment after subject has begun to breathe.

Indicates presence of anything in throat, clogging passage to lungs.



smallest club. Anyone can operate it safely and successfully. It is hand-operated, has no upkeep or maintenance cost. It gives the same lasting service and satisfaction that Draeger apparatus has always given the Navy, Coast Patrols, Steamship Companies, Life Saving Services, etc. Where death has not occurred, it will fan the slightest spark of life to full vigor. Weighs only 12 lbs., with all accessories in compact case. Can be stowed in a locker on either yacht or club veranda.

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A LIFE IS LOST

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AGENTS for Wolf Safety Lamp Co. of America
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DRAEGER Apparatus is made in Pittsburgh under U. S. Patents



The New Murphy Can

Ready for Service

With a coat of sea tan on your face and a coat of waterproof spar on your boat, you will be fit for any service.

Murphy Transparent Spar Varnish

"the varnish that lasts longest"

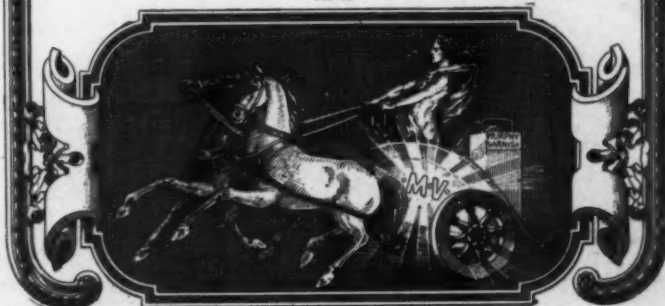
is a fine, elastic salt and fresh water finish made expressly for shipmasters and their craft. It has been used over half a century by sailors who know the severe tests to which shipping subjects boat varnish. Murphy Transparent Spar Varnish and Murphy White Enamel are the highest attainment in ship preservatives. They dignify, beautify and make all boats easily cleanable. Ask your dealer for them.

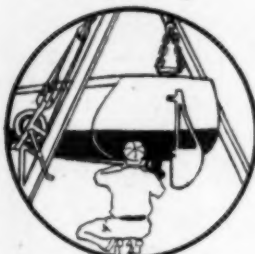
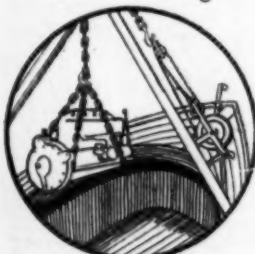
Murphy Varnish Company

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ANA



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for paintingRehabilitating
Stern Bearings

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Pulls up on bank
Anchors it.Pulls off
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Tells all about Pull-U-Out,
how and why it works and
the hundred and one uses
it can be put to.

Here's the very thing you've wanted

There are so many uses this powerful and wonderful little machine can be put to on board *every* motor boat or yacht, that it will prove one of the *best* investments you ever made for equipment. It pays for itself in *one* season.

The response to our announcement last season proves that Pull-U-Out fills a long felt want. It is invaluable for pulling boats up out of the water during the season if they spring a leak, or for painting, etc. If the rudder needs fixing, or stuffing box is bothersome you will then have evidence of the *real* worth of Pull-U-Out.

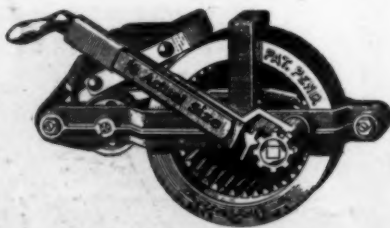
When winter comes and your boat is out you can put Pull-U-Out in the tool box of your automobile and be prepared when you get stuck in the mud, skid into a ditch or overturn.

This clever and wonderful little machine consists of a winding drum, lever crank, 40 ft. of steel cable, two 7 ft. chains and 3 anchoring stakes. The whole outfit goes into space 4 x 8 x 14 inches and weighs only 28 lbs. It has a dead weight lifting capacity of 2,000 lbs. and will pull 100,000 lbs. on wheels. Larger sizes have greater capacity.

With this pigmy with the giant's strength you can unaided, pull your boat out or lift it for painting and repairs. It's easy to rig it up as shown. Pull-U-Out is equally useful in pulling boats ashore and anchoring them, and for pulling them off the rocks or mud.

Sold on the make good basis

You take absolutely no risk in buying a Pull-U-Out. We guarantee to refund your money in full if it does not come up to your expectations. Leading dealers are selling Pull-U-Out on these terms. If your dealer doesn't stock it write us.

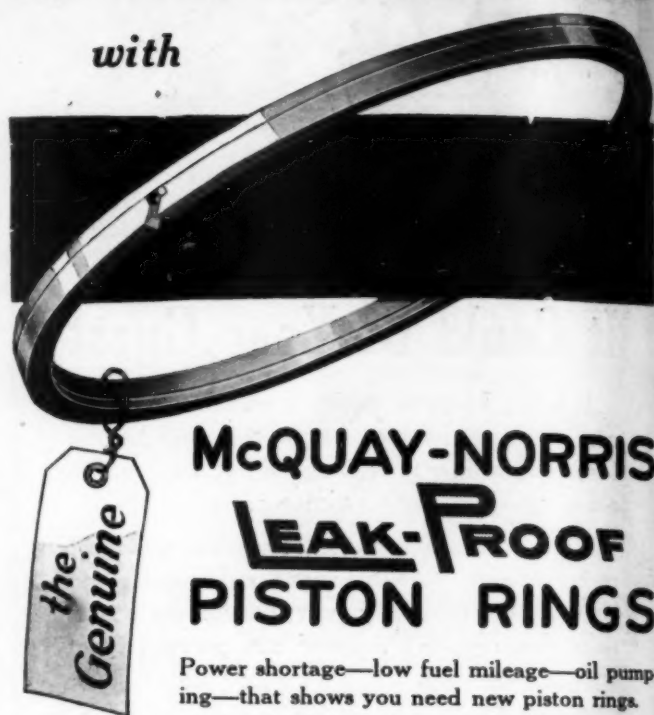


Pull-U-Out Sales Co., 2039 MARKET STREET
ST. LOUIS, MO.

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Advertising Index will be found on page 38

Re-vitalize Your Motor

with



McQUAY-NORRIS LEAK-PROOF PISTON RINGS

Power shortage—low fuel mileage—oil pumping—that shows you need new piston rings.

Replace them with Genuine McQuay-Norris **LEAK-PROOF** Piston Rings. You'll be amazed at the strong, steady, dependable service you get from the motor; the economy in fuel and oil; reduced carbon trouble.

Perfect, even tension without friction is only found in McQuay-Norris **LEAK-PROOF** Rings. It's due to their individual and exclusive type of construction. Added to this is the special processed gray iron from which they are made, and accurate finish.

Whatever the make or type of motor, you can get Genuine McQuay-Norris **LEAK-PROOF** Piston Rings in exact size to fit it,—standard or over-size rings both in widths and diameters.

All garage and repair men handle them. Complete service stocks carried by jobbing and supply houses all over the country.

SEND FOR FREE BOOKLET

"To Have and to Hold Power"—the standard handbook on gas engine compression. Tells what piston rings are, why they're used and what they mean in motor efficiency. Write Dept. B.

Manufactured by

McQuay-Norris Mfg. Co., St. Louis, U.S.A.

BRANCH OFFICES

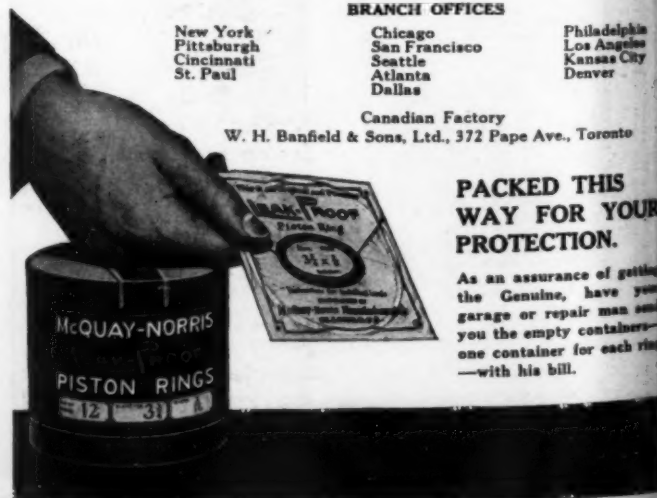
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W. H. Banfield & Sons, Ltd., 372 Pape Ave., Toronto



**PACKED THIS
WAY FOR YOUR
PROTECTION.**

As an assurance of getting the Genuine, have your garage or repair man send you the empty containers—one container for each ring—with his bill.

PARAGON REVERSE GEARS

Ever Try to Separate Two Panes of Glass?



HARD, wasn't it? That's because, as an engineer would say, every point on one of the surfaces is in contact with every point on the other surface. Add a little moisture to the surfaces and the feat is well nigh impossible.

Thus you see how the smoothly ground surface of the friction plates in Paragon Reverse Gears obtain their tremendous holding power. These plates are ground to a glass-like smoothness.

This, with the unusually large friction area, makes slipping on the forward drive almost unheard of in Paragons, when properly adjusted.

This great friction area enables your gear to take hold gradually, and when you have thrown your lever way into forward you can bet your last dollar that your motor will deliver every ounce of power to the propeller—where it belongs.

That's one reason why America's foremost marine engine builders depend on Paragons to uphold the prestige of their motors.

You can have a Paragon on that new motor of yours if you will ask for it—and it's well worth asking for—and insisting on.

SEND FOR CIRCULAR

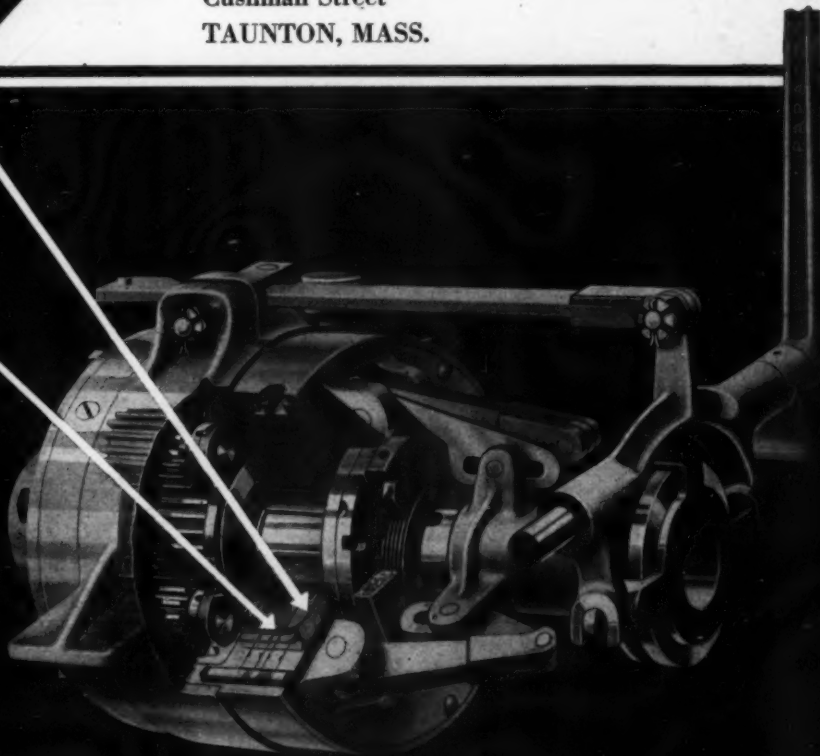
PARAGON GEAR WORKS

Evans Stamping and Plating Co.

Cushman Street
TAUNTON, MASS.

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- BOSTON, Rapp-Huckins Co.
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- JACKSONVILLE, Nat'l Boat & Engine Co.
- CHICAGO, Geo. B. Carpenter & Co.
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- SEATTLE, S. V. B. Müller
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Reg. U. S. Pat. Off.

SEA SLED

Reg. U. S. Pat. Off.

VIPER SEA SLED

HICKMAN PATENTS

**Latest Type Sea Sleds for Aviation Division, United States Army**

Able, seaworthy boats, designed for rescue work in open water.

Length, 28 feet. Weight on trials, 7800 pounds.

Two six-cylinder 6" x 6" engines

GUARANTEED SPEED, 35 STATUTE MILES PER HOUR**Speed Shown on Official Trials, 43.54 Statute Miles Per Hour**

Run from Gloucester to Boston, 28 miles, 18 miles of which is open water, in a stiff chop. Army officials aboard. Revolutions, 1200. Time, 48 minutes.

INCOMPARABLY THE FINEST SEA BOATS IN THE WORLD**MURRAY & TREGURTHA CO.**340 West First Street
South Boston, Mass.**THE VIPER CO., Ltd.**Pictou, Nova Scotia
Canada**Perfect Alignment Increases Speed**

You can't expect to develop maximum power and revolutions if your shaft binds in a water-soaked wooden shaftlog. Install one of our

Metal Adjustable Shaftlogs

It is adjustable from inside the boat to any angle desired, making it easy to get and maintain perfect alignment. The only shaftlog that provides for an outside sleeve to prevent moss or weeds wrapping around shaft.

Made in two sizes, send diameter of shaft with order.

¾ in. to 1 in. shaft, length 16 in.	Price, \$4.00
1½ in. to 1¾ in. shaft, length 24 in.	Price, \$5.00
Furnished in bronze if desired.	Price, \$9.00
Small size	Price, \$12.00
Large size	Price, \$12.00

**THE E. J. LIST MFG. CO.**Water Front Between
Main and Adams Sts.

Havana, Ill.

Easily installed in any boat, old or new. Rubber gaskets make it waterproof

Easier Starting for Stubborn Engine

If your engine is hard to turn over, or doesn't start easily, remove the load and start it free with this

Double Grip Clutch Coupling

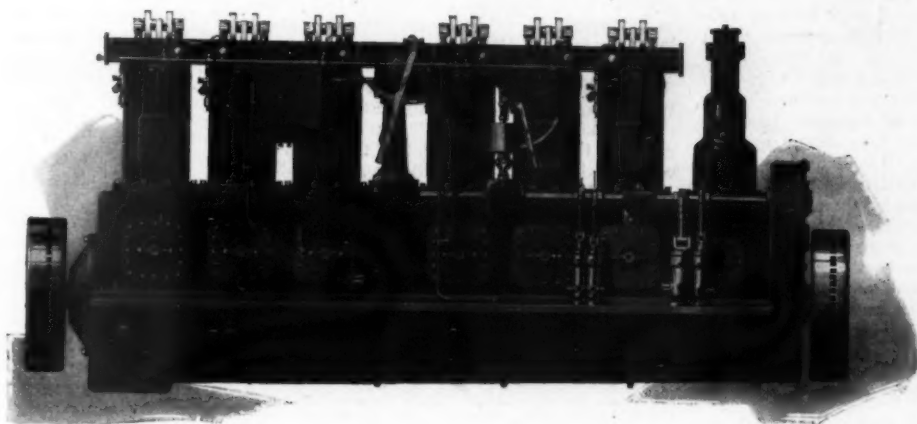
A combination coupling and one way clutch that connects the engine and shaft as firmly as a flanged coupling. The clutch has Double Grip which is guaranteed to hold.

Made of close grain gray iron. Practically indestructible. Trouble-proof. Only wear comes on two fiber discs which can be renewed for 15 cents.

Small size, 6 in. diameter, will hold 15-in. propeller	Price, \$7.50
Large size, 9 in. diameter, will hold propeller larger than 15 in.	Price, \$10.00

Order today or write
for complete descriptionsWhen writing to advertisers please mention MOTOR BOATING, the National Magazine of Motor Boating
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WINTON OIL ENGINES



First offered to the public one year ago this company has since that time contracted for and is building an aggregate of 25,000 B. H. P.

A REMARKABLE TRIBUTE TO A REMARKABLE PRODUCT

The sizes—150 to 1500 H. P.

A few machines are available for 1917 delivery.

WINTON ENGINE WORKS
CLEVELAND, OHIO

All Motor Boats to Be Licensed

The Secretary of the Navy Issues Orders Requiring That All Motor Boatmen Make Application and Submit a Certificate of Character—No Charge for Licenses

THE Secretary of the Navy has ordered that as soon as possible all motor boats and sailing vessels engaged in the navigation of waters in the various Naval Districts be licensed. The licenses will be granted by the Commandants of the various Naval Districts, and in some Districts by sectional or base commanders of the Naval Coast Defense Reserve, at their base headquarters, without cost. Application for licenses may be made in person or by mail, and in accordance with the form printed below. At the time of applying for a license the motor boatman must submit a certificate of character, which must be duly subscribed and sworn to in case the applicant is not an American citizen.

In case the applicant is a member of a club he should have his application certified by the secretary or flag officer of his club. The club secretary or other officer may submit applications for licenses from all boat owners in his club, provided the applications have been properly filled out, and signed by the owners.

Licenses will be granted along the lines of the form printed below in order of the receipt of the application. Numbers will be assigned to the licenses, and same must be carried on board the boat at all times, and be shown to any patrol officer requesting to see same.

The orders of the Secretary of the Navy, together with the regulations in the several Naval Districts, headquarters, etc., follow:

NAVY DEPARTMENT Washington

From: The Secretary of the Navy.
To: Commandant, First Naval District, Navy Yard, Boston, Mass.
Commandant, Second Naval District, Naval Station, Newport, R. I.
Commandant, Third Naval District, Brooklyn Navy Yard, Brooklyn, N. Y.
Commandant, Fourth Naval District, Navy Yard, Philadelphia, Pa.
Commandant, Fifth Naval District, Citizens Bank Bldg., Norfolk, Va.
Commandant, Sixth Naval District, Navy Yard, Charleston, S. C.
Commandant, Seventh Naval District, Naval Station, Key West, Florida.
Commandant, Eighth Naval District, Navy Yard, New Orleans, La.
Commandant, Ninth Naval District, Naval Station, Great Lakes, Illinois.
Commandant, Twelfth Naval District, 417 Sheldon Bldg., San Francisco, Cal.
Commandant, Thirteenth Naval District, Navy Yard, Puget Sound, Washington.
Commandant, Fourteenth Naval District, Naval Station, Honolulu, T. H.

Subject: Control of local traffic and navigation through defensive sea areas.

1. The Department directs that immediate steps be taken to license all vessels engaged in

the navigation of waters comprised in naval districts, or in the navigating of defensive sea areas. Persons taking out such licenses must submit satisfactory references as to intentions, loyalty, etc. Licenses for vessels belonging to yacht or boat clubs or to a company may be obtained through such club or company.

2. The Department has no intention of placing any undue restrictions on traffic, but must be cognizant of the character of the vessels navigating the waters of the United States.

3. The penalty for violating the regulations prescribed for defensive sea areas is laid down in paragraph IX of the regulations approved by the President. It is not clear that any penalty whatsoever can be prescribed for failure to carry a license from the commandant, but vessels neglecting to do so may be detained and sent in to the nearest port for examination provided that in the judgment of the boarding officer such course is necessary and desirable.

4. Licenses issued in a naval district will be numbered serially. The numbers—

1 to 10,000 are assigned to the First District.
10,001 to 20,000 are assigned to the Second District.
20,001 to 30,000 are assigned to the Third District.
30,001 to 40,000 are assigned to the Fourth District.
40,001 to 50,000 are assigned to the Fifth District.
50,001 to 60,000 are assigned to the Sixth District.
60,001 to 70,000 are assigned to the Seventh District.
70,001 to 80,000 are assigned to the Eighth District.
80,001 to 90,000 are assigned to the Ninth, Tenth and Eleventh Districts.
90,001 to 100,000 are assigned to the Twelfth District.
100,001 to 110,000 are assigned to the Thirteenth District.
110,001 to 120,000 are assigned to the Fourteenth District.

5. A sample form of license is inclosed and the Commandants will be supplied with the blanks as soon as possible.

JOSEPHUS DANIELS.

HEADQUARTERS, SECOND NAVAL DISTRICT. Newport, Rhode Island

1. By direction of the Secretary of the Navy, all vessels, except as stated below, either power or sail, engaged in the navigation of waters comprised in the Second Naval District must be licensed. The Second Naval District comprises the coastal waters within limits as follows:

Eastern limit—A line due east from Chatham, Massachusetts.

Western limit—A line extending from Goshen Point to Orient Point, thence along the shore of Long Island to Long Beach Bar Light, thence along a line to Cedar Island Light, thence along the shores of Long Island to Montauk Point.

Chatham is in the First Naval District. New London is in the Second Naval District.

2. Coastwise steamers and sailing craft whose destinations take them outside of the Second Naval District, and all other merchant craft whose regular schedules take them outside of the District, are excepted.

3. Blank forms of application for license to navigate the waters of the Second Naval District will be issued to all applicants. Persons taking out licenses must submit satisfactory references as to loyalty and intention. Licenses must be carried on board vessels for which issued. Licenses for vessels belonging to yacht or boat clubs, or to a company, may be obtained through such clubs or company. Yacht clubs will be given blank applications upon request.

4. The Navy Department has no intention of placing any undue restrictions on traffic, but must be cognizant of the character of the vessels navigating the waters of the District.

5. Licenses will be issued by the Commandant of the Second Naval District for navigating the waters of the entire District.

6. The penalty for violating the regulations prescribed for defensive sea areas is laid down in paragraph IX of the regulations approved by the President.

The Second Naval District is divided into six sections, but licenses are to be issued for the whole District, therefore the section boundaries are not necessary for the information of motor boat owners.

The headquarters of the District is at the Naval Station, Newport, R. I.

Licenses are to be issued by the Commandant's Office and will be signed by the Acting Commandant of the Second Naval District, Captain H. F. Bryan, U. S. N., or by his direction.

Captain C. D. Stearns is the commander of the Second District Naval Forces and has command of all patrol vessels that will enforce rules as to licensed boats.

Application for License to Navigate Waters of Second Naval District

Name and Description of boat.....
(Description must fully identify vessel.)
.....
Owner..... Master..... Motor No.....
Owner's Address.....
Motive Power (Sail, Steam or Gasoline).....
What waters desired to navigate?.....
Business boat engaged in?.....
State if both day and night license required?.....
State if intention to cruise out of District (See Head Note).....
What Yacht or Boat Club does vessel belong to.....
References as to intentions and loyalty, Nationality.....
.....

(Continued on page 86)

Application for License to Navigate Waters of the Naval District

To: 1917.
Commandant, Naval District,
License Office,
Section No.

Sir: Application is hereby made for a license for the

(Name of Vessel) (Length)
(Rig) (Kind of Propulsion) (Motor No.)
(Owner) (Master)
(Yacht Club)

of the Port of to navigate the waters of
the entire Naval District, or in part as follows:

..... Owner
..... Address
..... Master
..... Address

Make application on above forms for license to operate your motor boat this summer. Tear out and present or mail to the Commandant of your Naval district or the proper license officer nearest you. Call upon the Editor of MoToR Boating if you need any assistance.

Character Certificate

I, of
herely certify that the above-named applicant is personally known
to me, that he is a { native-born citizen of the United States,
{ naturalized that he is a
(If other nationality state here)
person of reputable character and that he is loyal to the United
States; all to the best of my knowledge and belief.

Address

Occupation

(Citizenship; native-born or naturalized)

Subscribed and sworn to before me this day of
....., 1917, at

(Oath to be taken before any official empowered to administer same.)

Oath is not necessary when application is made in person by an American citizen.

Compliments of MoToR Boating

Scripps

BUSINESS AS USUAL—ONLY MORE SO

Canada 211% United States 201.8% Foreign 156%

The above figures show the increase in the business of the Scripps Motor Company from the beginning of our fiscal year, September 1st, 1916 to June 1st, 1917, as compared with the same preceding period.

These results show a big healthy increase in our regular marine engine business. We have had no war contracts and no war business.

It will be noted that Canada has shown a bigger percentage of increase in our business than either the business at home or abroad, and Canada doing her "bit" in the third year of the war.

With this showing there is little for businessmen in the United States to fear.

So we say, "business as usual, only more so."

Don't let war or the thought of its effect on business interfere with your plans in enjoying motor boating. Buy that boat and engine now, that you had planned on buying.

The country is in an exceedingly safe and prosperous condition. There is no need of alarm in any line of business. This is the consensus of opinion among bankers and the best informed commercial men everywhere. England is more prosperous than she ever was.

The Government will put huge sums of money into circulation, but in order that this money may be raised business must go on as usual. It's unpatriotic to think or act in any way that would put the country into financial panic or depression. "Do your bit." Buy as you always have bought. Enjoy motor boating.

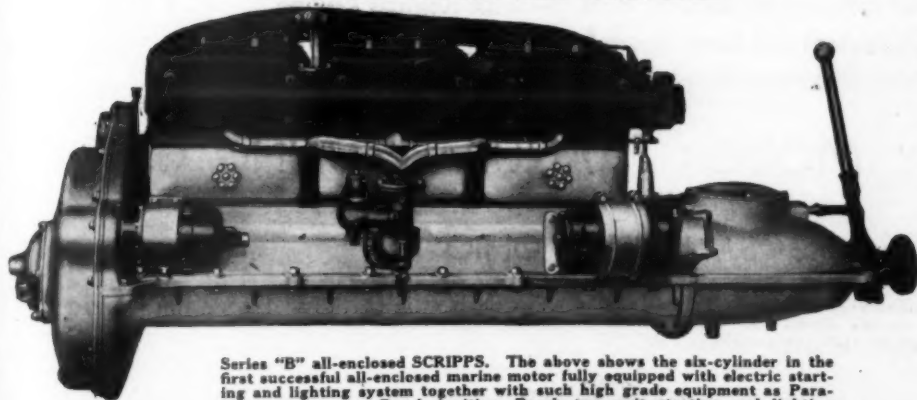


"Scripps Special," 15 H.P., \$326.00.
A moderate priced four-cylinder valve-in-head unit power plant for open boats and cruisers from 17 to 28 ft. Simple, rugged and economical, it gives exceptional service in medium duty or speed work. Magneto and reverse gear are included at the figure quoted. Weight, 425 lbs.

Prosperity has been here, is here and is here to stay.

The Scripps Motor Company is staking its future on this firm conviction. As a result there has been no let-up in our activity. We haven't cancelled one cent's worth of orders for parts or material. In fact we are ordering more. We haven't laid off one man in our shop. In fact, we are taking on more.

That's one reason why we are in such good shape to give you delivery and service right now.



Series "B" all-enclosed SCRIPPS. The above shows the six-cylinder in the first successful all-enclosed marine motor fully equipped with electric starting and lighting system together with such high grade equipment as Paragon reverse gear, Bosch ignition, Bosch two unit starting and lighting system, Schebler carburetor, Willard storage battery, etc.
Manufactured in two, four and six cylinders, 10 to 125 H.P.

A complete line of engines to choose from—from 10 to 125 H.P. two, four and six cylinders.

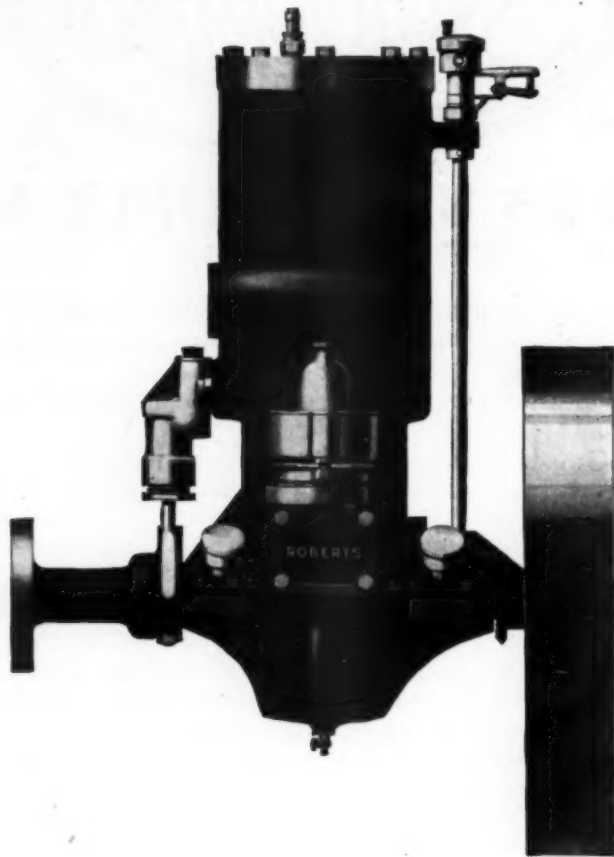
Yes, don't change your mind about that boat.

It's great sport and the nation needs men, old and young, trained in engine and boat handling.

"DO YOUR BIT"

Send for your catalog today

SCRIPPS MOTOR CO., 631 Lincoln Ave., Detroit, Mich.



Model "S" 8-10 H.P. Fisherman's Engine

THE Roberts Heavy Duty Motor for Work Boats is a mighty strong, sturdy and dependable power plant. It will run, and keep on running, under the hardest of working conditions. It will operate on either gasoline, kerosene or Californian Distillate. Compact, powerful, sturdy but light and with Roberts well-known qualities built right into it, this Work Boat Engine will prove an excellent investment for you.

You can have this engine equipped with either Jump Spark or Make-and-Break Ignition. Lubrication is entirely automatic—Just mix your lubricating oil with your gasoline and the motor gets just the proper lubrication at all speeds. A highly efficient system that relieves you of all worry on this score.

Net price on this 8-10 H. P. Motor with Regular Engine
Equipment and Jump Spark Ignition . . . \$150.00
With Make-and-Break Ignition . . . 165.00

ROBERTS MOTOR MANUFACTURING CO.

1205 Roberts Bldg.

SANDUSKY, OHIO

N. B. Immediate delivery can be made on this engine, either singly or in quantities. We can also make immediate shipment on our Model "T" motors manufactured in single, double and four cylinder units rated at 4 H.P., 8 H.P. and 16 H.P., respectively.



SOCONY MOTOR GASOLINE SUPPLY STATIONS

Where STANDARD OIL COMPANY OF NEW YORK
SOCONY MOTOR GASOLINE and POLARINE OIL and GREASES can be OBTAINED

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A. L. Anderson
C. Poling
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(Schooner "Lawrence")
Capt. Cattermole
C. N. Solheim
C. C. Wincapaw & Son

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Pt. N. 12th St., B'klyn
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Pt. E. 23rd St., N. Y. City
(The Anna Service)
Pt. E. 120th St., N. Y. City
Pt. Walnut Ave., Bronx
Killa, N.Y.
S. O. Co. of New York
John Rehm

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New Rochelle, N. Y.
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Oyster Bay, L. I.
Huntington L. I.
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Northport, L. I.
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Tarrytown
Poughkeepsie
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Yacht Club
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Tarrytown Yacht Club
Poughkeepsie Chair Co.

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Newburgh Launch W'ks
Mead & Taft Co.
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Hyde Park
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New London
Mystic

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Middleport
Buffalo
Albion
Little Falls
Syracuse
Lockport
Medina
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Dunkirk

OSWEGO CANAL

Fulton

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Clayton
Alexandria Bay
Grindstone Isl'd
Ogdensburg
Fine View
Point Vivian

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Mountain Lake
Long Lake
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Lake George
Old Forge
Raquette Lake
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STANDARD OIL COMPANY OF NEW YORK

(Continued from page 82)

DIRECTIONS.

1. All vessels, excepting as stated below, desiring to navigate the waters of the Second Naval District must be licensed. Applications for licenses will be made to the Commandant of the Second Naval District, Newport, R. I.
2. Coastwise steamers and sailing craft whose destination takes them outside of the Second Naval District, and all other merchant craft whose regular schedules take them outside the District, are excepted.
3. All vessels belonging to a yacht club or a boat club must submit their applications for licenses to the secretary of such club for certification. After certification by the secretary, the application will be forwarded to the Commandant for the issuance of the license.
4. All vessels belonging to or chartered by a company must submit their applications through such charter party or company and be certified to by a responsible official of such charter company. After such certification they will be forwarded to the Commandant for the issuance of the license.
5. Individuals owning vessels and desiring licenses not in the above categories, will send applications to the Commandant.
6. Licenses must be carried on board the vessel for which issued.
7. Applications for licenses must be accompanied by duplicate photographs of the vessel to be licensed. Such photographs to be, preferably, of post-card size.
8. Owners of vessels are entirely responsible for intentions of vessels as well as for the intentions of all persons on board. Theft of vessel or theft of license will be promptly reported to the Commandant.
9. Persons taking out licenses must submit satisfactory references as to intentions, loyalty, etc.
10. The Navy Department has no intention of placing any undue restrictions on traffic, but must be cognizant of the character of the vessels navigating the waters of the United States.

THIRD NAVAL DISTRICT
Navy Yard, New York, N. Y.
District Order No. 2

1. The Third Naval District extends from New London, Conn., to and including Barnegat, N. J.
2. This district is divided into nine sections as follows:

Section No. 1—Headquarters, New Haven, Conn. (Old New Haven Yacht Club)

This section extends from New London, Conn., to Bridgeport, Conn. (exclusive). It includes the waters of Long Island Sound inside of a line from Goshen Point to Bartlett's Reef light vessel, from Bartlett's Reef light vessel through Cornfield light vessel to Stratford Shoal light, from Stratford Shoal light to Stratford Point light and the Housatonic River. This section includes the following counties of Connecticut, and waters in same: New Haven, Middlesex and New London to the Thames River.

Section No. 2—Headquarters, Bridgeport, Conn. (Black Rock Yacht Club)

This section includes the waters of Long Island Sound inside of a line from Stratford Point light to Stratford Shoal light, from Stratford Shoal light to Execution Rocks light, from Execution Rocks light to East tangent of Huckleberry Island, from East tangent of Huckleberry Island to Westchester-Bronx boundary line. This section includes the following counties and

waters (except Hudson River) in same: Westchester, N. Y., and Fairfield, Conn.

Section No. 3—Headquarters, Port Jefferson, L. I.

This section includes the waters of Long Island Sound inside of a line from Orient Point to Bartlett's Reef light vessel, from Bartlett's Reef light vessel to Stratford Shoal light, from Stratford Shoal light to Crane's Neck Point, Great Peconic Bay, and Little Peconic Bay. This section includes the following townships and waters in same: Brookhaven south to main line of Long Island Railroad; Riverhead, and Southold.

Section No. 4—Headquarters, Montauk, L. I. (Fort Pond Bay)

This section includes the waters of the Atlantic Ocean west of a line true south from Montauk Point, and east of a line true south from Shinnecock light. This section includes the following townships and waters in same: East Hampton and Southampton to Shinnecock Canal.

Section No. 5—Headquarters, West Sayville, L. I. (Blue Point Oyster Co.)

This section includes the waters of the Atlantic Ocean west of a line true south from Shinnecock light to a line from Oak Island Coast Guard station to Fire Island light vessel. This section includes the following townships and waters in same: Southampton to Shinnecock Canal, Brookhaven North to main line of Long Island Railroad, Islip and Babylon.

Section No. 6—Headquarters, Coney Island, N. Y.

This section includes the waters of the Atlantic Ocean west of a line from Oak Island Coast Guard Station to Fire Island light vessel, to a line from Norton Point light to Ambrose light vessel; Gravesend Bay east of a line from Norton Point to Fort Lafayette; and Jamaica Bay. This section includes the following townships, counties, and waters in same: Oyster Bay north to Long Island Railroad (at Bethpage); Hempstead, Queens County north to main line of Long Island Railroad; and Kings County.

Section No. 7—Headquarters, Whitestone, L. I. (Whitestone Yacht Club)

This section includes the waters of Long Island Sound inside of a line from Crane's Neck Point to Stratford Shoal light, from Stratford Shoal light to Execution Rocks light, from Execution Rocks light to East tangent Huckleberry Island, from East tangent Huckleberry Island to East River to a line true West from Newtown Creek. This section includes the following townships, counties, and waters in same (except Hudson River): Whitestone, Huntington, Oyster Bay south to Long Island Railroad (Bethpage); North Hampton, Queens County south to main line of Long Island Railroad; Bronx County.

Section No. 8—Headquarters, Tompkinsville, S. I. (Lighthouse Dept.)

This section includes the waters of the Upper and Lower New York Harbor, the waters inside of a line from Norton Point to Ambrose light vessel, from Ambrose light vessel to Sandy Hook; Raritan Bay, Kill von Kull, Arthur Kill, Newark Bay, Hudson River to New Jersey boundary line, and East River to Newtown Creek. This section includes the following counties and waters in same: Richmond, New York; Bergen, Hudson, Union, Middlesex and Essex, New Jersey.

Section No. 9—Headquarters, Coney Island, N. Y.

This section includes the waters of the Atlantic Ocean south of a line true east from Sandy Hook light, to a line true east from Barnegat. This section includes the following counties and inland waters in same: Monmouth and Ocean, to and including Barnegat, New Jersey.

Sections 6 and 9 are combined, with headquarters at Bay 17th St. and Coney Ave., Bath Beach, Brooklyn, N. Y.

FOURTH NAVAL DISTRICT,
Navy Yard, Philadelphia, Pa.

1. By direction of the Secretary of the Navy, all vessels, either under power or sail, engaged in the navigation of waters comprised in the Fourth Naval District, must be licensed. Persons taking out such licenses must submit satisfactory references as to intention, loyalty, etc. Licenses must be carried on board the vessel for which issued. Licenses for vessels belonging to yacht or boat clubs, or to a company may be obtained through such club or company.

2. The Department has no intention of placing any undue restrictions on traffic but must be cognizant of the character of the vessels navigating the waters of this District.

3. Licenses will be issued under the direction of the Commandant of the Fourth Naval District through section commanders. Application may be made as follows:

For Cape May Section—from section headquarters at Cape May. This section extends from Barnegat Inlet to Cape May Lighthouse, inclusive.

For Cape Henlopen Section—from section headquarters at Lewes, Delaware. This section extends from Cape Henlopen to Assateague Anchorage, inclusive.

For Delaware River Section—from section headquarters at Navy Yard, Philadelphia. This section comprises the Delaware River to Fourteen-Foot Bank light.

For Delaware Section—from section headquarters at Lewes, Delaware. This section extends from Fourteen-Foot Bank light to Fifty-Fathom Curve.

4. Vessels wishing to operate in waters comprised in more than one section in the District will be licensed by the Commandant of the District.

5. Application for licenses should state clearly what part of the waters of the District it is desired to operate in.

6. All vessels must be licensed not later than June 15, 1917.

FIFTH NAVAL DISTRICT.

Licensing in this District is done at headquarters at Norfolk, Va., and at Baltimore, also by the officials of the Virginia and Maryland Oyster police which are enrolled under this District for service. These latter cover the rivers and bay of the Chesapeake region. Licensing in Pamlico Sound region will be done by Coast Guard cutter Pamlico with headquarters at Newbern, N. C. Large vessels including fishing vessels will be licensed usually at Baltimore and Norfolk. Motor boats and yachts as far as possible close to their home ports by Maryland and Virginia oyster navies which have regular stations in bay and rivers within the respective states.

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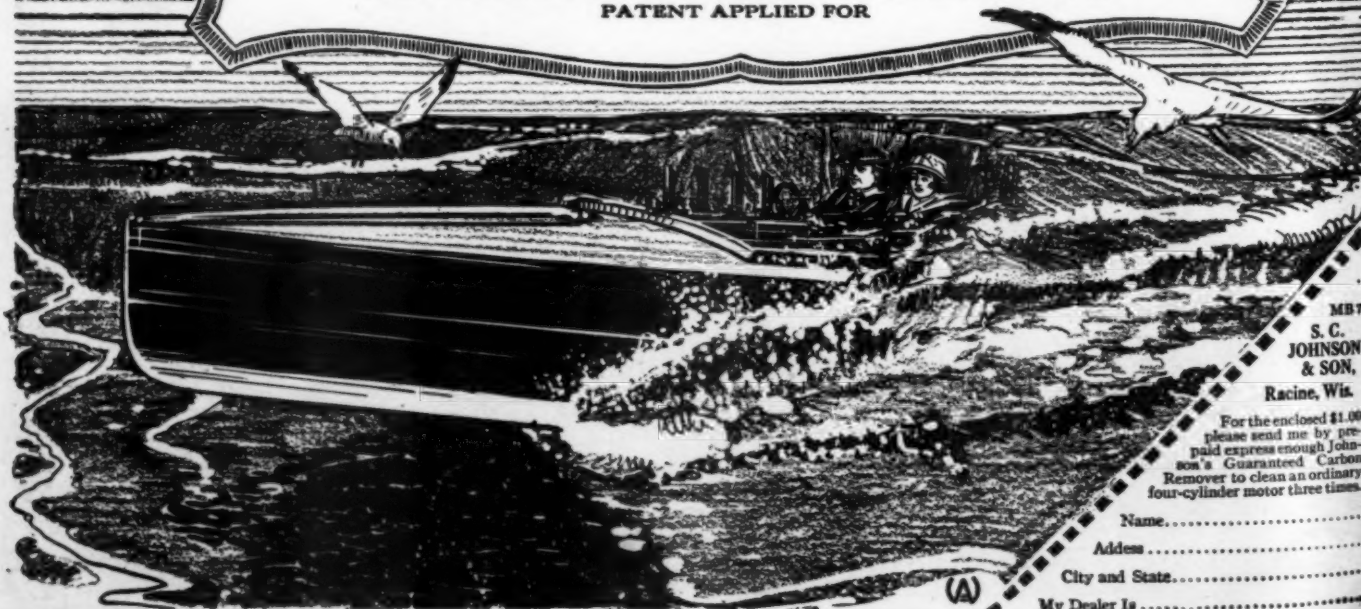
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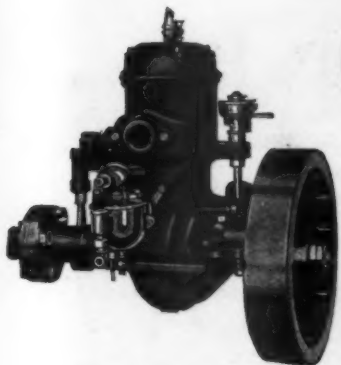
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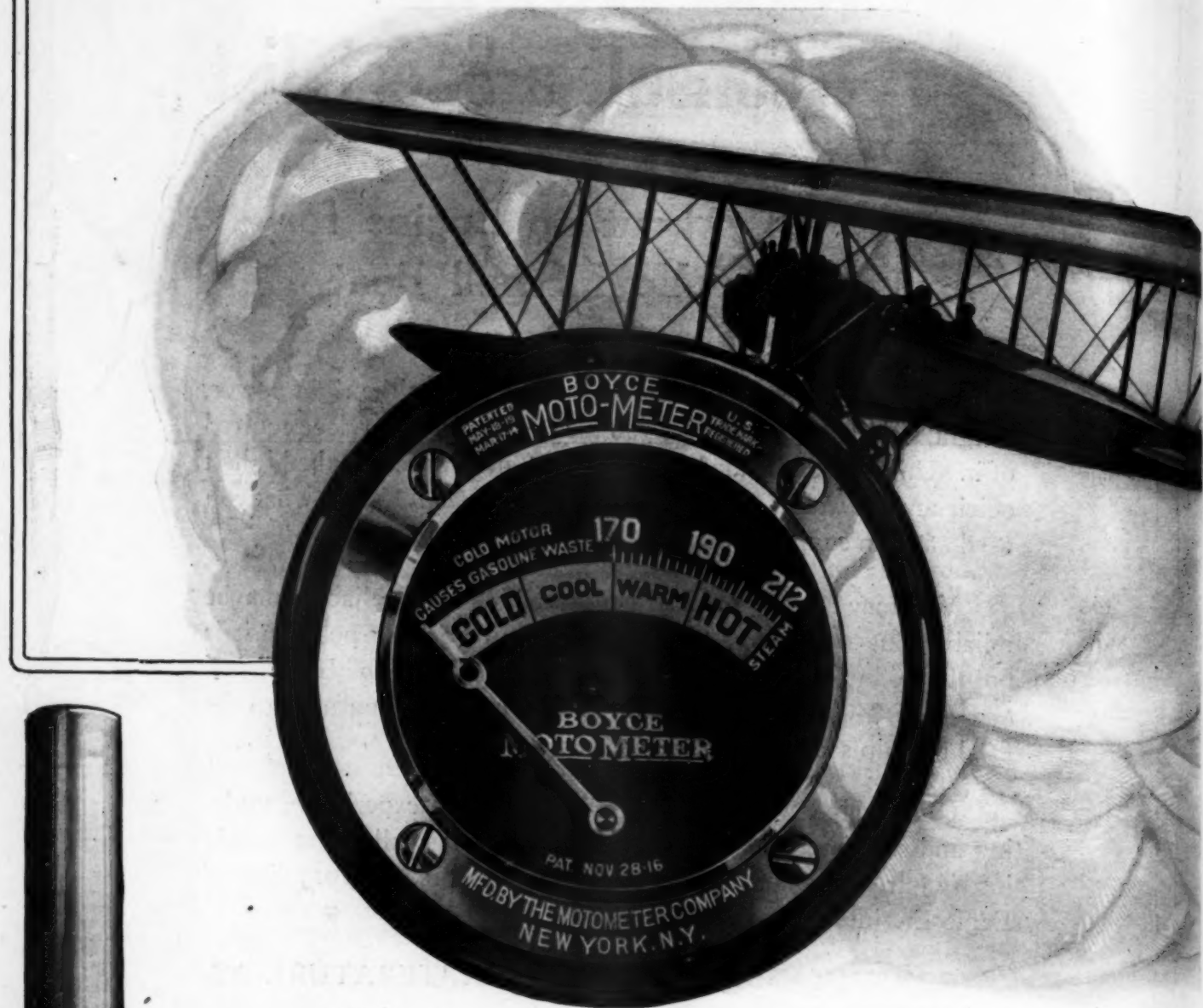
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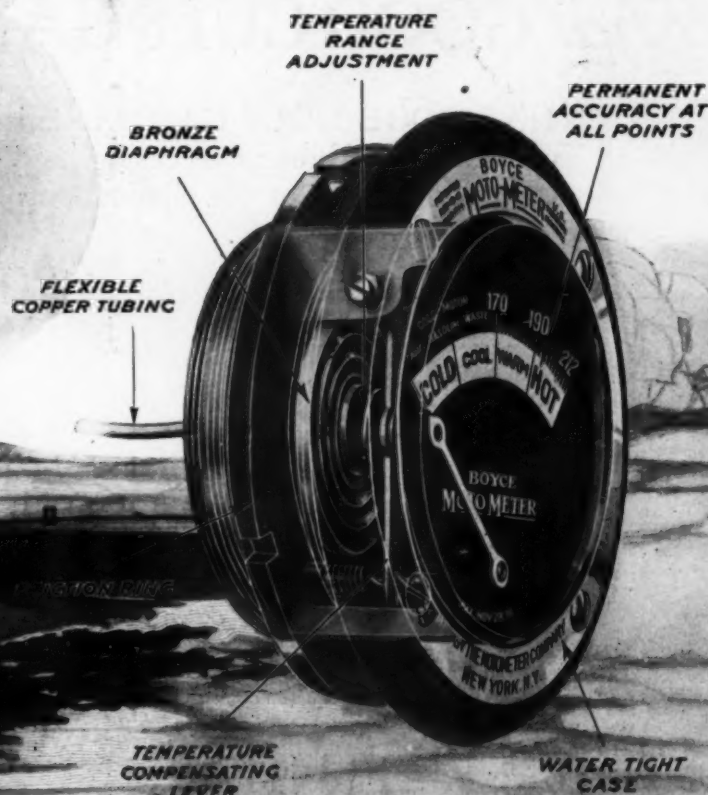
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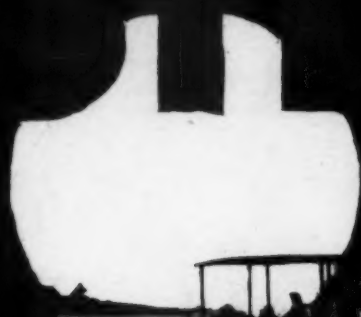
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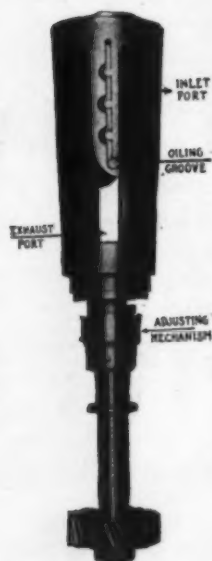
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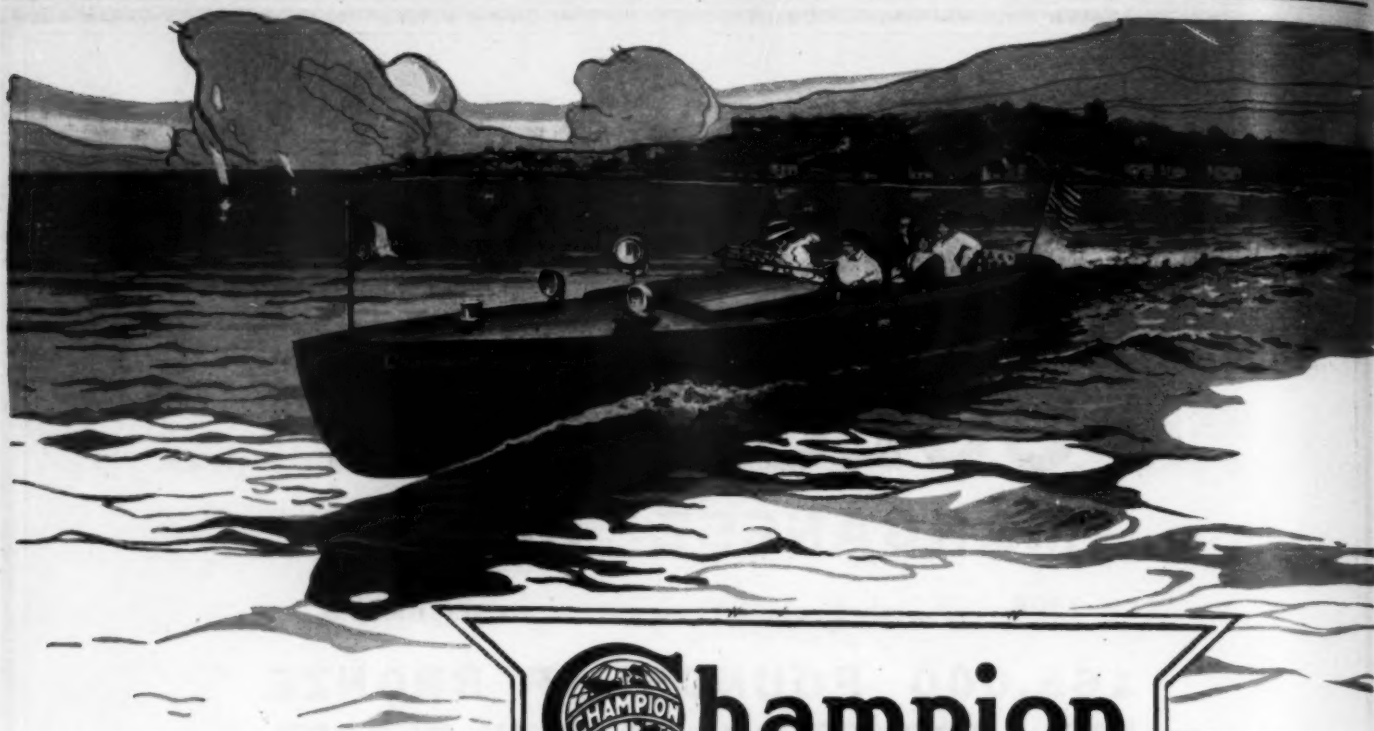


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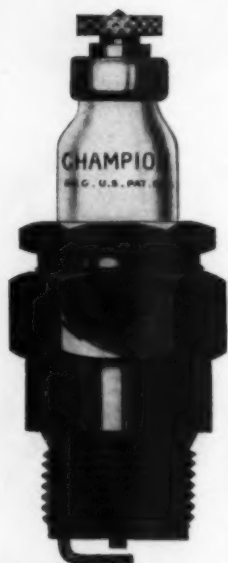
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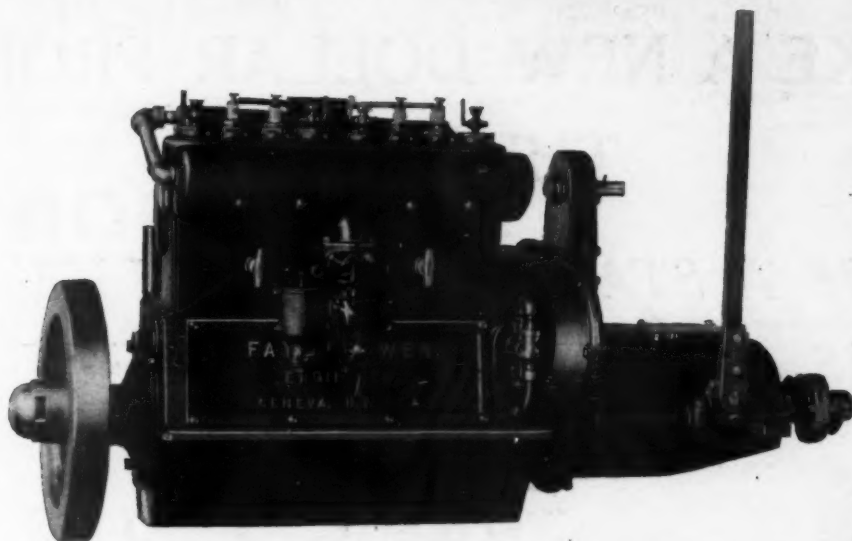


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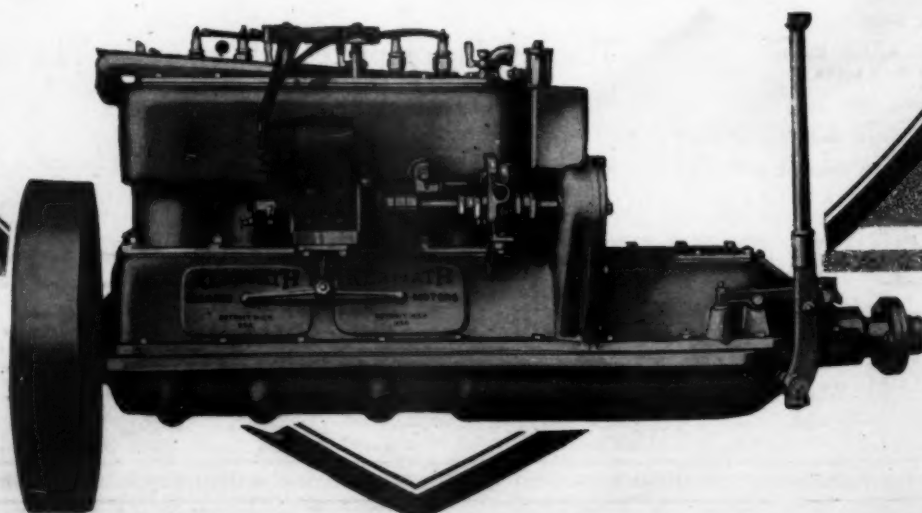
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